Objections to the

Cecil D. Andrus-White Clouds and Hemingway-Boulders

Wilderness Management Plan

and

Environmental Assessment

Submitted by:

North American Packgoat Association

Mr. Larry Robinson

June 21, 2018

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VIA ELECTRONIC SUBMITTAL AND U.S. MAIL

RE: Objections to the Cecil D. Andrus-White Clouds and Hemingway-Boulders Wilderness Management Plan and Environmental Assessment

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On behalf of the North American Packgoat Association ("NAPgA") and Mr. Larry Robinson, I hereby timely submit these Objections to the Cecil D. Andrus-White Clouds and Hemingway-Boulders Wilderness Management Plan and Environmental Assessment. If you have any questions concerning these objections or need further information, you may contact NAPgA, Mr. Larry Robinson or Andrew Irvine at the emails and phone numbers indicated above.

Date: June 21, 2018

Mr. Larry Robinson

Andrew A. Irvine
of Andrew A. Irvine, P.C.

I. Introduction to Objections

The North American Packgoat Association ("NAPgA") and Mr. Larry Robinson (collectively "NAPgA") timely file objections to the Cecil D. Andrus-White Clouds and Hemingway-Boulders ("HB-WC") Draft Wilderness Management Plan ("Draft WMP") and Environmental Assessment ("EA"), and the associated Draft Decision Notice ("Draft DN") and Finding of No Significant Impact ("FONSI").[1] Objections are filed pursuant to the Forest Service's objection process at 36 C.F.R. § 218, Subparts A – B and § 219, Subpart B. The objection filing period expiries June 22, 2018.

1. Information about NAPgA

The North American Packgoat Association, Inc. is an organization established specifically for promoting packing with packgoats. The organization was incorporated in March 2001 as a 501(c)(3) non-profit organization. NAPgA seeks to further the pursuit of goatpacking by sharing the knowledge, ideas and experiences of its members; by promoting the use of packgoats to the public as a means of low impact wilderness transportation and recreation; by serving as an advisory group on local and national land use issues; and by engaging in other activities related to educating the public about goatpacking. NAPgA appreciates this opportunity to file objections on the Draft WMP, EA, Draft DN, and FONSI.

2. Summary of Objections

NAPgA and Mr. Larry Robinson provided comments on the Draft WMP and Draft EA, as detailed in the EA. *See* EA at 129, 301-307. These comments explained that pack goats do not pose a significant risk of disease transmission to bighorn sheep on the HB-WC Wilderness, provided science indicating that pack goats rarely carry *Mycoplasma ovipneumoniae* and corrected the Sawtooth National Forest's ("Sawtooth NF") conclusions concerning research by Besser et al. (2017), among other comments. These comments were not adequately addressed by the Sawtooth NF in the Draft WMP, EA and Draft DN, and form the basis for these objections.

The Sawtooth NF does not present any definitive scientific information establishing pack goats as a risk of disease transmission to bighorn sheep on the HB-WC Wilderness, and, in fact, ignores scientific information indicating pack goats DO NOT pose a substantial risk of disease transmission to bighorn sheep. The Sawtooth NF has not justified a partial closure of the HB-WC Wilderness to goatpacking, nor has it explained why pack goats are such a risk that they must be restricted within or near occupied bighorn sheep habitat.

The Draft DN indicates that between the Draft WMP and EA and the Draft DN, the wording in Wildlife Resources Standard 2155 for pack goat measures was changed from "Enforce" to "Require." Draft DN at 4. As a result, under Alternative A (Proposed Action – the WMP), a Wildlife Resources Standard "[r]equire(s)" that certain measures be employed by goatpackers on the HB-WC Wilderness to "minimize contact between bighorn sheep and domestic goats used for packing." *Id.* at 7. Alternative A also includes a Standard to:

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[1] Available at https://www.fs.usda.gov/project/?project=49647.

"[p]rohibit pack goats within Pack Goat Exclusion Area, as described in Figure 4 of the WMP." *Id.* These same standards are described in the EA at Section 2.5.1 and in Table 2. *See* EA at 10-11, 16-17; *see also* EA at 48.

NAPgA and its numerous goatpacking-members will be adversely affected by the management direction proposed in the Draft WMP. Alternative A would prohibit pack goats on 26,773 acres (29%) of the HB-WC Wilderness, while on the remaining portion of the Wilderness, pack goat users would be required to adopt certain measures for handling goats. EA at 55-56. The proposed management direction would result in partial closure of a premier goatpacking area, but of even greater concern, the proposed management direction relies on faulty and incomplete science, which may be wrongly relied upon by other public lands agencies and set a bad precedent for management of goatpacking on our public lands.

Wildlife Resources Standard 2155 concerning pack goats should be changed to a Guideline that provides for the adoption of the measures from NAPgA to minimize contact between bighorn sheep and domestic goats used for packing. There is no basis for "enforcing" or "requiring" such measures. In addition, the Standard prohibiting pack goats within the Pack Goat Exclusion Area, as described in Figure 4 of the WMP, should be removed. Because of the negligible risk of disease transmission between bighorn sheep and pack goats, the closure is unjustified.

These objections will better inform the Draft WMP, EA, Draft DN, and FONSI, and further develop the efficacy of the Sawtooth NF's management direction. Each of the objections below contains a statement of the issues addressed in the objection and references the parts of the Draft WMP, EA, Draft DN, and FONSI to which the objection applies. NAPgA urges the Forest Service to thoroughly consider these objections and respond in accordance with the objection process. NAPgA welcomes, and hereby requests, the opportunity to meet with the objection reviewing officer to discuss the objections presented herein and to collaboratively develop resolutions to such objections.

II. Legal Background for Objections

1. NEPA Prevents Uninformed Agency Action

In passing NEPA, Congress "recogniz[ed] the profound impact of man's activity on the interrelations of all components of the natural environment" and set out "to create and maintain conditions under which man and nature can exist in productive harmony." 42 U.S.C. § 4331(a). To bring federal action in line with Congress' goals and to foster environmentally informed decision-making by federal agencies, NEPA "establishes 'action-forcing' procedures that require agencies to take a 'hard look' at environmental consequences." *W. Watersheds Project v. Kraayenbrink*, 632 F.3d 472, 486 (9th Cir. 2011) (citing *Metcalf v. Daley,* 214 F.3d 1135, 1141 (9th Cir. 2000)). Foremost among those procedures is the preparation of an environmental impact statement ("EIS"). *Id.*

Agencies considering "major Federal actions significantly affecting the quality of the human environment" are required to prepare an EIS. 42 U.S.C. § 4332(C). The EIS "shall provide full and fair discussion of [the] significant environmental impacts" of the proposed

action. 40 C.F.R. § 1502.1. NEPA "ensures that the agency . . . will have available, and will carefully consider, detailed information concerning significant environmental impacts; it also guarantees that the relevant information will be made available to the larger [public] audience." *Robertson v. Methow Valley Citizens Council,* 490 U.S. 332, 349 (1989); *see also Lands Council v. McNair*, 629 F.3d 1070, 1075 (9th Cir. 2010); 40 C.F.R. § 1500.1(b) (stating that environmental information must be provided "before decisions are made and before actions are taken"). This process does not mandate particular substantive results, but "NEPA . . . prohibits uninformed . . . agency action." *Robertson v. Methow Valley Citizens Council,* 490 U.S. at 351. By focusing agency and public attention on the environmental effects of proposed action, "NEPA ensures that the agency will not act on incomplete information, only to regret its decision after it is too late to correct." *Marsh v. ONRC*, 490 U.S. 360, 371 (1989).

Under NEPA, federal agencies also have a general obligation to respond to public comments under 40 C.F.R. § 1503.4(a). Specifically, the agency must "discuss at appropriate points in the final [EIS] any responsible opposing view which was not adequately discussed in the draft [EIS] and . . . indicate the agency's response to the issues raised." *Ctr. for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1167 (9th Cir. 2003) (quoting 40 C.F.R. § 1502.9(b)). A failure to do so is itself a NEPA violation. *Id.* at 1168. The agency must also "insure the professional integrity, including scientific integrity, of the discussions and analyses" included in an EIS. 40 C.F.R. § 1502.24.

A threshold question in a NEPA analysis is whether a proposed project will "significantly affect" the environment, thereby triggering the requirement for an EIS. 42 U.S.C. § 4332(2)(C). As a preliminary step, an agency may prepare an EA to decide whether the environmental impact of a proposed action is significant enough to warrant preparation of an EIS. 40 C.F.R. §§ 1501.4(c), 1508.9(a)(1) (Council on Environmental Quality regulations); 36 C.F.R. § 220.7 (Forest Service regulations). An EA is a "concise public document that briefly provide[s] sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact [FONSI]." *Id.* § 1508.9(a)(1). An EA should include a brief discussion of the need for the proposal, the environmental impacts of the proposed action and alternatives, and a listing of the agencies and persons consulted in the analysis process. *Id.* § 1508.9(b); 36 C.F.R. § 220.7(b).

Courts rely on NEPA regulations, promulgated by the Council on Environmental Quality ("CEQ"), to guide their review of an agency's determination of "significance." *See* 40 C.F.R. § 1508.27; *see also Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 372 (1989) (CEQ regulations entitled to substantial deference). Whether there may be a "significant" effect on the environment requires consideration of two broad factors: context and intensity. 40 C.F.R. § 1508.27; *National Parks & Conservation Ass'n v. Babbitt,* 241 F.3d 722, 731 (9th Cir.2001)). Context simply delimits the scope of the agency's action, including the interests affected. *Id.* at 731. Intensity relates to the degree to which the agency action affects the locale and interests identified in the context part of the inquiry. *Id.*

CEQ regulations provide relevant factors for evaluating intensity, including:

(1) beneficial and adverse impacts;

(2) the degree to which public health and safety are affected;

(3) unique characteristics of the geographic area;

(4) the degree to which impacts are likely to be controversial;

(5) the degree to which impacts are highly uncertain or involve unique or unknown risks;

(6) the degree to which the action establishes a precedent for future actions with significant impacts;

(7) cumulative impacts;

(8) effects on scientific, cultural, or historic resources;

(9) the degree to which the action may adversely affect a threatened or endangered species;

(10) whether the action threatens to violate any law which protects the environment.

40 C.F.R. § 1508.27(b).

The presence of one such factor may be sufficient to deem the action significant in certain circumstances. *Klamath-Siskiyou Wildlands Center v. U.S. Forest Service*, 373 F. Supp. 2d at 1079 (citing *Ocean Advocates v. United States Army Corps of Eng'rs*, 361 F.3d 1108, 1125 (9th Cir. 2004)); *see also Friends of the Earth v. United States Army Corps of Eng'rs,* 109 F. Supp. 2d 30, 43 (D.D.C. 2000). "An agency's decision not to prepare an EIS will be considered unreasonable if the agency fails to supply a convincing statement of reasons why potential effects are insignificant." *Klamath-Siskiyou Wildlands Center*, 373 F. Supp. 2d at 1079 (citing *Save the Yaak Committee v. Block,* 840 F.2d 714, 717 (9th Cir. 1998)); *see also Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) (citation omitted). "The statement of reasons is crucial to determining whether the agency took a 'hard look' at the potential environmental impact of a project." *Blue Mountains Biodiversity Project*, 161 F.3d at 1212.

An EIS must be prepared if "substantial questions are raised as to whether a project . . . may cause significant degradation of some human environmental factor." *Blue Mountains Biodiversity Project*, 161 F.3d at 1212 (citing *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998)). Thus, to prevail on a claim that an agency violated its statutory duty to prepare an EIS, a "plaintiff need not show that significant effects will in fact occur." *Idaho Sporting Congress*, 137 F.3d at 1150. It is enough for the plaintiff to raise "substantial questions whether a project may have a significant effect" on the environment. *Id.*

2. Review Under the APA

The Administrative Procedure Act ("APA"), 5 U.S.C. §§ 701-706, provides for judicial review of agency actions, such as those at issue here.[2] Under the APA, a reviewing court shall "hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law; . . . [or] without observance of procedures required by law." 5 U.S.C. § 706(2)(A), (D). Although the arbitrary and capricious standard is a "narrow one," the court is required to "engage in a substantial inquiry" and a "thorough, probing, in-depth review." *Native Ecosystems Council v. U.S. Forest Serv.*, 418 F.3d 953, 960 (9th Cir. 2005) (quoting *Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 415-16 (1971)).

Under this standard, an agency decision is to be reversed as arbitrary and capricious if the agency has ". . . entirely failed to consider an important aspect of the problem, [or] offered an explanation that runs counter to the evidence before the agency. . . ." *Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). "The reviewing court should not attempt itself to make up for such deficiencies." *Id.* (citation omitted). Most fundamentally, the agency must "examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Motor Vehicle,* 463 U.S. at 53 (quotation omitted).

Where, as here, there has been a change in policy from allowing goatpacking on the Sawtooth NF to eliminating goatpacking on the Forest, judicial review starts with the presumption that the change in policy is *not* justified by the administrative record. *Motor Vehicle*, 463 U.S. at 42. Additionally, the traditional presumption of agency expertise "'may be rebutted if the decisions, even though based on scientific expertise, are not reasoned.'" *W. Watersheds Project v. Ashe*, No. 11-462, 2013 WL 2433370 at *5 (D. Idaho June 4, 2013) (citations omitted).

In addition to the requirements of NEPA and the APA, Forest Service regulations require that "best available science" be taken into account in forest planning. 36 C.F.R. § 219.3. In taking "best available science" into account, the Forest Service must "document how the best available science information was used to inform the assessment, the plan decision, and the monitoring program" and such documentation must "[i]dentify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered." *Id.*

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[2] NEPA claims are subject to judicial review under the APA, 5 U.S.C. § 706(2)(A). *See Dep't of Transp. v. Pub. Citizen,* 541 U.S. at 763; *Marsh,* 490 U.S. at 375–76; *League of Wilderness Defenders-Blue Mtns. Biodiversity Project v. U.S.*, 549 F.3d 1211, 1215 (9th Cir. 2008) (the APA provides authority for the court's review of decisions under NEPA); *W. Watersheds Project v. U.S. Forest Serv.*, 2006 WL 292010, *2 (D. Idaho) (same).

III. Objections to the Draft WMP, EA, Draft DN, and FONSI

1. The Sawtooth NF Must Consider Dr. Margaret Highland's Research Concerning the Limited Prevalence of *Mycoplasma ovipneumoniae* in Pack Goats.

Although the Sawtooth NF was presented with research completed by Dr. Margaret Highland, Research Veterinarian with the Animal Disease Research Unit-ARS-USDA, the Sawtooth NF failed to consider the research, explaining:

> [t]he Wildlife Specialist Report reviewed literature related to domestic goat and bighorn sheep disease transmission. Highland's research was not published, which is why it was not used in the wildlife analysis.

EA at 180; *see also* EA at 263, 297, 308, 311.

It is unclear both under NEPA and the Forest Service's own regulations, where the Sawtooth NF came up with this standard for eliminating Dr. Highland's research from consideration in the EA and the associated, but unseen Wildlife Specialist Report. "Publication" is not the standard for consideration under NEPA, nor is it the standard under the Forest Service's regulations and direction concerning use of the best available scientific information to inform the planning process.

The Sawtooth NF is also oddly willing to rely on the literature and summary of bighorn sheep disease transmission issues from Pils and Wilder 2017, which discusses and relies upon Dr. Highland's research in great detail, but somehow excludes the research from its own analysis. *See* EA at 90 (referencing Pils and Wilder 2017). The same standards for considering science on the Shoshone NF apply to the Sawtooth NF, so it is unclear how one Forest must consider the research, while another (the Sawtooth NF) excludes the research?

Regardless, under the APA and NEPA, the Sawtooth NF is required to consider the fundamental aspect of the problem of disease transmission, namely, whether pack goats can actually carry and transmit *Mycoplasma ovipneumoniae* to bighorn sheep in the wild. *See Motor Vehicle,* 463 U.S. at 43. The Sawtooth NF is also required to examine relevant data, consider opposing viewpoints, ensure the scientific integrity of its discussions, and articulate a satisfactory explanation for its action. *See id.* at 42-43, 53; *Ctr. for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d at 1167 (quoting 40 C.F.R. § 1502.9(b)).

Moreover, and in addition to the requirements of the APA and NEPA, Forest Service regulations require that "best available science" be taken into account in forest planning. 36 C.F.R. § 219.3. In taking "best available science" into account, the Forest Service must "document how the best available science information was used to inform the assessment, the plan decision, and the monitoring program" and such documentation must "[i]dentify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered." *Id.* The Forest Service Land Management Planning Handbook, FSH 1909.12, directs the Sawtooth NF's use of the best available scientific information and at no point states that relevant, accurate

and reliable research can be excluded from consideration based on "publication." In fact, the opposite is true, where research is relevant, accurate and reliable, the Forest Service should include it as the best available scientific information. *See* FSH 1909.12, 42.13.

Dr. Highland's research is summarized in Exhibit 1 and indicates that pack goats do not commonly carry the disease-causing organisms associated with bighorn sheep die-offs. The results of the testing performed for Dr. Highland's research are also included in Exhibit 1, so that the Sawtooth NF can consider the results and verify the legitimacy and scientific method in the research. This science must be considered in the EA under the APA and NEPA, as well as the implications of pack goats not being carriers of *Mycoplasma ovipneumoniae*. If pack goats are not carriers of disease-causing pathogens, then they do not pose a risk of disease transmission to bighorn sheep on the Sawtooth NF.

Conclusion and Recommendations: The Sawtooth NF must review and consider Dr. Highland's research in the EA. Such consideration is required by the APA, NEPA and the Forest Service's own planning regulations. Dr. Highland's research indicates that pack goats are rarely carriers of *Mycoplasma ovipneumoniae*. As a result, pack goats do not pose a significant risk of disease transmission to bighorn sheep on the HB-WC Wilderness. Pack goats cannot transmit disease they do not have. These points must be considered in the EA.

2. The Sawtooth NF Fails to Ensure the Scientific Integrity of the EA and Must Correct and/or Remove Unsupported Statements Concerning Domestic Goats and Pack Goats from the EA.

In evaluating the environmental impacts of a proposed action, NEPA requires federal agencies to ensure the professional integrity, including scientific integrity, of an environmental analysis by considering appropriate studies and data. 40 C.F.R. § 1502.24. An agency may not rely on conclusory statements unsupported by data, authorities, or explanatory information. *Seattle Audubon Soc'y v. Moseley*, 798 F. Supp. 1473, 1480-83 (W.D. Wash. 1992), *aff'd*, 998 F.2d 699 (9th Cir. 1993). NEPA requires that an agency candidly disclose in its analysis the risks and effects of its proposed actions, and that it respond to adverse opinions held by respected scientists. *Seattle Audubon*, 798 F. Supp. at 1482 (*citing Friends of the Earth v. Hall*, 693 F. Supp. 904, 937 (W.D. Wash. 1988)). Further, under NEPA, courts have held that agency actions based on unexplained assumptions are arbitrary and capricious. *Ctr. for Biological Diversity v. U.S. Dep't of the Interior*, 623 F.3d 633, 650 (9th Cir. 2010); *see also Dow Agrosciences LLC v. Nat'l Marine Fisheries Serv.*, 707 F.3d 462, 470 (4th Cir. 2013) (agency must explain why lab tests reflect nature).

In addition to the requirements of NEPA, Forest Service regulations require that "best available science" be taken into account in forest planning. 36 C.F.R. § 219.3. In taking "best available science" into account, the Forest Service must "document how the best available science information was used to inform the assessment, the plan decision, and the monitoring program" and such documentation must "[i]dentify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered." *Id.*

The Sawtooth NF has failed to ensure the professional integrity, including scientific integrity, of the discussions and analyses in the Draft WMP, EA and Draft DN as required under NEPA. The Sawtooth NF has also failed to take "best available science" into account in the Draft WMP, EA and Draft DN. Further, the Sawtooth NF appears to be operating on incomplete information concerning disease transmission from domestic goats and pack goats to bighorn sheep, and also appears to be ignoring important aspects of the problem of disease transmission as well as offering explanations in the Draft WMP, EA and Draft DN that run counter to the evidence before the Sawtooth NF. Much of the analysis and discussion in the EA concerning pack goats lacks factual or scientific support.

A. The Sawtooth NF Must Not Rely on Besser et al. (2017) in the Draft WMP, EA or Draft DN as the Findings and Conclusions from that Research Article are Unsupported by Data and Have Been Subject to Later Corrections.

In the EA, the Sawtooth NF, relying on Rudolph et al. (2003) and Besser et al. (2017), claims that "[c]ontrolled research studies have confirmed that . . . *Mycoplasma ovipneumoniae* are transmitted to wild sheep from domestic goats." EA at 90. The Sawtooth NF also relies on "Besser and others 2017[,] who conducted experiments to test disease transmission potential from domestic goats to bighorn sheep" for the statement in Forest Service Response to Comment Number CC-01,

> *Mycoplasma ovipneumoniae* strains carried by domestic goats were transmitted to comingled bighorn sheep, triggering development of pneumonia. However, the severity of the disease was markedly milder than that seen in similar experiments with domestic sheep strains of the bacterium.

EA at 170. The Sawtooth NF then states, "[t]hese studies show that transmission can occur." *Id*. The Sawtooth NF makes similar responses to comments in the EA at pages 294, 296, 301, 304.

NAPgA presented extensive comments concerning Dr. Besser's article as well as comments concerning the scientific integrity of, and best available science in, the EA. As NAPgA asserted then, and reasserts now, the statement that "*Mycoplasma ovipneumoniae* strains carried by domestic goats were transmitted to comingled bighorn sheep, triggering development of pneumonia" is *false* and *must be removed* from the EA.

Dr. Besser's research article is filled with inaccuracies and exaggerations and lacks objectivity. *See* http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0178707. Indeed, the publisher *PLOS ONE* has recently issued a correction to the article to correct some of the inaccuracies and exaggerations. *See* http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0192006. More corrections are warranted, if not complete retraction of the article. Regardless, the Sawtooth NF is required to rely on best available science and cannot disregard available scientific evidence that runs counter to, or is more reliable than, that relied upon by the agency. *See*, *e.g.*, *Kern Cnty. Farm Bureau v. Allen*, 450 F.3d 1072, 1080 (9th Cir. 2006) (quoting *Southwest Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60, 342 U.S. App. D.C. 58 (D.C. Cir. 2000)). The analysis below

demonstrates that the research article by Dr. Besser is flawed. The Sawtooth NF must consider this analysis and correct its discussion of Dr. Besser's research article in the EA to ensure that it has used the best available science and to comply with the requirements of NEPA. *See*, *e.g.*, *Cf. Ecology Ctr. v. Castaneda*, 574 F.3d 652, 659 (9th Cir. 2009).

i. Misrepresentation of Data

Dr. Besser's research article is filled with inaccuracies and exaggerations and lacks objectivity. First and foremost, Dr. Besser improperly and repeatedly misrepresents data in his research article. For example, on page 1 of 13 of the article, under "Methodology/Principal findings," the article states: "At the end of experiment 3, gross and histological evidence of pneumonia similar to that observed in experiment 1 bighorn sheep was observed in both affected bighorn sheep and domestic goats." Similarly, on page 10 of 13 in the "Discussion" the article states: "All bighorn sheep exposed to goats carrying *M. ovipneumoniae* in experiments 1 and 3 developed signs and lesions of pneumonia. . . ." And, on page 7 of 13 with respect to "Necropsy findings" the article states, "All animals in the study had similar histopathologic lesions." Finally, with respect to Figure 3 on page 9 of 13, the article states, "Similar lesions were observed in all necropsied experimental animals."

In direct contradiction to these statements, Table 3 of the article on page 7 of 13, titled "Microbiological status and pathologic lesions of animals in experiments 2 and 3," states, "*No lesions seen*" for bighorn sheep BHS31. (emphasis added). The same is stated in Table 3 for domestic goat DG6. So, evidently, not "all" bighorn developed "lesions" of pneumonia, nor did "all animals" have similar "histopathologic lesions," as Dr. Besser states in his article. Dr. Besser misrepresents the data in the research article.

More indicative of Dr. Besser's misrepresentations, however, is the histopathology report from the Washington Animal Disease Diagnostic Laboratory ("WADDL") upon which Dr. Besser supposedly based the above statements. A copy of the histopathology report, WADDL #2015-7604 dated June 10, 2015, was obtained from WADDL and is included here as an attachment (Exhibit 2). The histologic diagnoses for bighorn sheep BHS28, BHS28L and BHS31 on page 2 of 2 of WADDL #2015-7604 provide:

1. Mild (#31) to moderate (#28 and 28L) lymphoid peribronciolitis with mild bronchiolar epithelial hyperplasia
2. Mild lypmphoplasmacytic tracheitis (all sheep)

Further, the "comments" on page 2 of 2 of WADDL #2015-7604 state: "Lesions in lungs and tracheas are compatible with experimental infections with *Mycoplasma ovipneumoniae*. M. ovi has been demonstrated in all animals by PCR."

There is *no* diagnosis of "pneumonia" in the histopathology report, WADDL #2015-7604. Yet, Dr. Besser somehow concludes in his research article that "gross and histological evidence of pneumonia" was observed in experiment 3 bighorn sheep and that "all bighorn sheep" in experiment 3 "developed signs and lesions of pneumonia." Dr. Besser's conclusions appear contrary to the evidence in the histopathology report, WADDL #2015-7604.

Furthermore, in Figure 3 on page 9 of 13, titled "Representative histological lung lesions in experimental animals," images B and C do not appear to show pneumonia. Also, with respect to the images in Figure 3, on page 7 of 13, under the "Necropsy findings," the article states, "All animals in the study had similar histopathologic lesions that varied in severity, consisting of inflammation centered around bronchi and bronchioles and extending to include adjacent alveoli (Fig. 3). Inflammation was characterized by peribronchiolar and perivascular lymphoid hyperplasia with secondary suppurative bronchiolitis and alveolar atelectasis."

Only image "A" from Figure 3 on page 9 of 13 of the article shows "suppurative bronchiolitis," which corresponds to one bighorn sheep from experiment 1. The other images ("B" and "C") do not show "suppurative bronchiolitis." Likewise, the histopathology report, WADDL #2015-7604, does not describe "suppurative bronchiolitis" in any of the bighorn sheep from experiment 3, nor does it describe inflammation "extending to include adjacent alveoli."

Thus, there are significant discrepancies between the histopathology report and images in Figure 3 on one hand, and Dr. Besser's reported findings and discussion on the other hand. Most significant, however, is that the histopathology report and images for experiment 3 fail to provide any evidence of pneumonia. As a result, the Sawtooth NF cannot rely upon Dr. Besser's conclusions concerning pneumonia in bighorn sheep from experiment 3 as they are not consistent with the histopathology report and histologic images.

In addition to the above, Dr. Besser's presentation of histologic images in Figure 3 is odd because it deviates from his past and standard practice of showing both gross and histologic images in a research article. Dr. Besser has reported on pneumonia in bighorn sheep in previous studies. *See*, *e.g.*, Besser TE, Cassirer EF, Potter KA, Lahmers K, Oaks JL, Shanthalingam S, et al. (2014) Epizootic Pneumonia of Bighorn Sheep following Experimental Exposure to *Mycoplasma ovipneumoniae*. PLoS ONE 9(10): e110039. https://doi.org/10.1371/journal.pone.0110039. So, it would appear that he knows what pneumonia looks like in bighorn sheep and how to show both the gross and histologic images of lungs of bighorn sheep. As presented in the referenced article on page 5, Figure 2, Dr. Besser shows and compares gross and histologic images of lungs of bighorn sheep. In his recent research article, though, Dr. Besser fails to show any of the gross images and thus precludes any comparison of gross and histologic images of lungs of bighorn sheep. Where are the gross images? Why weren't they shown as they have been before? Standard practices should be followed in Dr. Besser's research article, which include presentation of both the gross and histologic images of the lungs of bighorn sheep, instead of the limited set of data and images that was presented. The representations and conclusions in Dr. Besser's research article are not substantiated by the underlying data, histopathology reports and histologic images and cannot be relied upon by the Sawtooth NF.

ii. Exaggeration of Findings

Dr. Besser's article repeatedly exaggerates his findings to implicate domestic goats as a cause of pneumonia in bighorn sheep. The actual data and findings, however, suggest otherwise. To start, the title of the article is misleading: "Exposure of bighorn sheep to domestic goats colonized with Mycoplasma ovipneumoniae induces sub-lethal pneumonia." Such title is unrepresentative of the above-reported data. Exposure of bighorn sheep to domestic goats

colonized with Mycoplasma ovipneumoniae was *not* shown to induce sub-lethal pneumonia or any other kind of pneumonia in experiment 3.

For similar reasons, the statement on page 1 of 13, under "Conclusions/Significance," is unjustified: "M. ovipneumoniae strains carried by domestic goats were transmitted to comingled bighorn sheep, triggering development of pneumonia." Pneumonia was not show to be "trigger[ed]" in experiment 3.

Further, on page 7 of 13 with respect to "Necropsy findings," the article provides, "several animals had strong fibrous adhesions." By definition, "several" means "more than two." Yet, when you look at the referenced tables (Tables 1 and 3 in the article), only *two* animals (BHS33 (Table 1) and BHS28 (Table 3)) are listed as having "PA," which indicates "plueral adhesions." Use of language like the term "several" demonstrates the author's clear bias against domestic goats and inappropriately leads the reader to believe that the findings are more substantial than they actually are. These types of bias and exaggeration should not be present in a research article and should not be relied upon by the Sawtooth NF.

Dr. Besser also states at page 11 of 13 of the article, "bighorn sheep comingled with M. ovipneumoniae carrier goats consistently developed respiratory disease and pneumonia." That is not true. Likewise the following statement from page 10 of 13 of the article, in the "Discussion," is untrue: "Despite the consistent development of bighorn sheep pneumonia following contact with domestic goats carrying M. ovipneumoniae . . . ." The data and findings do not show that the bighorn sheep in the experiments "consistently" developed pneumonia.

iii. Other Inaccuracies

Comparison of other WADDL reports to the data presented in Dr. Besser's research article reveals other inaccuracies. For example, Table 2 on page 6 of 13 of the article indicates that M. ovipneumoniae was not detected ("NotDet") in bighorn sheep BHS31L2 using polymerase chain reaction ("PCR") testing. Yet, the "Molecular Diagnostics" presented in WADDL #2014-5187 at page 2 of 4, attached herein (Exhibit 3), state that Mycoplasma ovipneumoniae *was* "Detected" by PCR on a "Culture Medium-Bronchus" specimen. The data presented in Table 2 appears to be inaccurate. The WADDL report clearly states that M. ovipneumoniae was detected and, thus, the result should have been presented in Table 2 as "Det: B." Likewise, the statement in the article at page 6 of 13 that bighorn sheep BHS31L2 was "*M. ovipneumoniae*-negative" would also appear inaccurate.

Although unclear, perhaps Dr. Besser chose to report the data inaccurately, considering that bighorn lamb BHS31L2 is described as never having contact with domestic goats or with other bighorn sheep that had contact with domestic goats, yet it died and tested positive for Mycoplasma ovipneumoniae. That does not fit with the assertion made by Dr. Besser that the bighorn sheep that were captured from the wild for his research experiments were free of Mycoplasma ovipneumoniae prior to contact with domestic goats in the experiments. Whether a convenient oversight or based on improper motive, the data in Dr. Besser's article was misreported and the discussion misinformed. These, and the other inaccuracies in the research article corrupt the research article, making it unreliable and making it improper for the Sawtooth NF to rely upon it.

iv. Lack of Objectivity

The chain of events leading to *PLOS ONE*'s publication of Dr. Besser's article is also something that should be considered by the Sawtooth NF. In particular, rather than going to an independent and objective third-party lab to have microbiological and other testing done for his experiments, Dr. Besser's testing is done, in large part, by his wife and co-author of the research article, Dr. Kathleen Potter. Notably, "Kathleen Potter, Senior Pathologist" authorized the histopathology report provided herein (WADDL #2015-7604, Exhibit 2). As shown on the third page of that report, Dr. Besser specifically asked that histopathology be assigned to Dr. Potter. While there may not be any wrongdoing in having Dr. Potter perform required testing, it certainly raises a question about objectivity.

Additionally, Dr. Besser's article was edited by Dr. Marco Festa-Bianchet, which also raises questions of objectivity, as Dr. Festa-Bianchet is himself a bighorn sheep researcher and has long been dedicated to conservation of bighorn sheep. *See* http://marco.recherche.usherbrooke.ca/marco.htm; http://marco.recherche.usherbrooke.ca/iucnwork.htm. In particular, Dr. Festa-Bianchet's immediate advertisement of Dr. Besser's article on his Twitter feed under the title "Experimental evidence: domestic goats transmit pneumonia to bighorn sheep" does not give the impression of objectivity. *See* https://twitter.com/festa_bianchet/status/875012348695777280. One can begin to question how and why Dr. Festa-Bianchet apparently missed the inaccuracies and exaggerations in his review of Dr. Besser's article and failed to correct or even question why the discussion of the data and the descriptions of the images in the article did not correspond to what the data and images actually show.

v. Exposure of Bighorn Sheep to Domestic Goats Colonized with M. ovi Does Not Induce Fatal Pneumonia

At the end of the day, Dr. Besser cannot justifiably conclude in his article that exposure of bighorn sheep to domestic goats colonized with *Mycoplasma ovipnuemoniae* induced sub-lethal pneumonia in both of the experiments described within the *PLOS ONE* article. The data and findings do not justify such a broad-based conclusion. What Dr. Besser can conclude with confidence, based on the data and findings, is that not a single bighorn sheep died from exposure to domestic goats in any context throughout Dr. Besser's experiments. Indeed, as discussed on pages 5 through 7 of 13 of the article, to the extent bighorn sheep exhibited signs of respiratory problems when initially commingled with domestic goats, *all bighorn sheep exhibited fewer signs of respiratory problems over time, indicating recovery from such problems prior to being euthanized*. In following, the title of Dr. Besser's article could just have easily been: "Exposure of bighorn sheep to domestic goats colonized with *Mycoplasma ovipneumoniae* does not induce fatal pneumonia." Such title would be more reflective of the actual and objective data and findings from Dr. Besser's article.

Regardless, now that the Sawtooth NF has been presented with the actual scientific evidence for Dr. Besser's article, which runs counter to the misrepresentations, exaggerations and inaccuracies presented in his article, the Sawtooth NF must consider the evidence, as analyzed above, and correct its discussion of Dr. Besser's research article to ensure that it has

used the best available science and complied with the requirements of NEPA. *See*, *e.g.*, *Kern Cnty. Farm Bureau*, 450 F.3d at 1080 (quotation omitted); *Cf. Ecology Ctr.*, 574 F.3d at 659. The Sawtooth NF must also ensure the scientific integrity of the EA under NEPA, and reliance upon Dr. Besser's article for the statements made in the EA would be improper without consideration of the actual scientific evidence presented and analyzed above and without justification for Dr. Besser's findings and conclusions.

Conclusion and Recommendation: The Sawtooth NF's reliance upon Besser et al. (2017) is misplaced. The research article does *not* demonstrate that bighorn sheep commingled with domestic goats testing positive for *M. ovipneumoniae* developed pneumonia. To the extent the article can even be cited after being determined inaccurate and after being partially corrected, the data underlying the article (which have been provided to the Sawtooth NF) do not support Dr. Besser's findings and conclusions concerning pneumonia. Such data must be considered and analyzed by the Sawtooth NF. After such consideration and analysis, the Sawtooth NF must, consistent with the data, correct the statements in the EA indicating that the bighorn sheep in Dr. Besser's research article "all" developed pneumonia. Such statement is inaccurate. Moreover, because of the misrepresentations, inaccuracies and lack of objectivity in Dr. Besser's article, the Sawtooth NF should entirely remove the article from the EA. The Sawtooth NF should not rely upon faulty science.

B. The Sawtooth NF Must Remove Statements in the EA Indicating that Incidences of Pneumonia Related Die-Offs in Bighorn Sheep are Associated with Domestic Goats, as Such Statements are Unsupported.

The Sawtooth NF indicates, "[i]ncidences of pneumonia related die-offs in bighorn sheep are frequently associated with the presence of domestic sheep and goats (George et al. 2008, Wehausen et al. 2011)." EA at 48. The Sawtooth NF provides no basis for this statement as it applies to domestic goats. George et al. (2008) is a cite to the article "Epidemic Pasteurellosis in a Bighorn Sheep Population Coinciding with the Appearance of a Domestic Sheep," which does not concern domestic goats and is thus inapplicable to domestic goats. Wehausen et al. (2011) is a cite to the article "Domestic Sheep, Bighorn Sheep, and Respiratory Disease: A Review of the Experimental Evidence," which likewise was a study involving only domestic sheep, not domestic goats, so its scientific value to conclusions about domestic goats is unsubstantiated.

Still, after a review of available experimental evidence, including evidence concerning "domestic goats," Wehausen et al. (2011) provided, "these findings suggest that the presence of other species in pens itself is unlikely to lead to bighorn sheep deaths and, furthermore, that *species other than domestic sheep* and their relatives are considerably less likely to transmit pathogens potentially fatal to bighorn sheep." Wehausen et al. (2011) (emphasis added). Wehausen et al. (2011) does *not* make conclusions about contact between pack goats and bighorn sheep.

Later, the Sawtooth NF cites George et al. (2008) and Wehausen et al. (2011), as well as Heinse et al. (2016) for the statement, "[i]ncidences of pneumonia-related die-offs are frequently associated with the presence of pathogens commonly carried by domestic sheep and goats." EA

at 90. For the reasons discussed above, George et al. (2008) and Wehausen et al. (2011) do not support this statement, as it applies to domestic goats.

Although the study by Heinse et al. (2016) referenced by the Sawtooth NF indicates that certain farm flocks of sheep and goats may carry *M. ovi*, none of the flocks were reported to contain pack goats. The Sawtooth NF does not indicate how Heinse et al. (2016) applies to pack goat usage on the Sawtooth NF. Still, the study by Heinse et al. (2016) presents several interesting findings. First, the study demonstrated that small flocks of goats (around 4) tested negative for *M. ovi*, while large flocks of goats (around 30) were more likely to test positive (Heinse et al. 2016). Second, flocks that had significant interaction with domestic sheep and other animals were also more likely to test positive (Heinse et al. 2016). Finally, flocks of pure-bred goats were unlikely to test positive (Heinse et al. 2016).

The results from Heinse et al. (2016) are consistent with those presented by Dr. Highland in Exhibit 1. Small flocks of goats, along with pure-bred goats are unlikely to test positive for offensive pathogens, such as *M. ovi*. Most, if not all, pack goats are kept in small groups and many pack goats are pure-bred. As such, the results obtained by Dr. Highland are consistent with those of Heinse et al. (2016): pack goats do not often carry *M. ovi*.

The management direction recommended by Heinse et al. (2016) for dealing with farm flocks was to assist owners in purging *M. ovi* from their flocks and then set up an annual sampling and certification for both *M. ovi* free flocks "and pack goats." Considering that the latest veterinarian work suggests that *M. ovi* is also harmful to domestic sheep and goats, sheep and goats owners have an incentive to eliminate *M. ovi* from their animals (Heinse et al. 2016). Although the likelihood of a pack goat ever carrying *M. ovi* is extremely low, and the likelihood of a pack goat with *M. ovi* ever contacting a bighorn sheep and such contact leading to transmission of *M. ovi* is even more improbable, NAPgA has indicated that their members would be willing to submit to *M. ovi* sampling and certification as recommended by Heinse et al. (2016).

Conclusion and Recommendations: The references to George et al. (2008), Wehausen et al. (2011) and Heinse et al. (2016) do not support the above statements in the EA. As a result, the statements should be appropriately corrected or removed. Incidences of pneumonia and related die-offs are NOT frequently associated with the presence of pack goats. Such an event has never happened before.

C. The Sawtooth NF Misrepresents the Findings of Rulolph et al. (2003) and Must Correct its Discussion of Such Reference in the EA.

The Sawtooth NF, relying on Rudolph et al. (2003) and Besser et al. (2017), claims that "[c]ontrolled research studies have confirmed that . . . *Mycoplasma ovipneumoniae* are transmitted to wild sheep from domestic goats." EA at 90. This statement referencing Rudolph et al. (2003) blatantly misrepresents the findings of Rudolph et al. (2003) and wrongly concludes that the reference somehow shows that "*Mycoplasma ovipneumoniae* are transmitted to wild sheep from domestic goats." The reference did not even involve *Mycoplasma ovipneumoniae*.

The Rudolph et al. (2003) study was funded by the Foundation for North American Wild Sheep and involved a feral domestic goat, which has been the source of significant speculation and conjecture, but no actual evidence of disease transmission. The conclusion of Rudolph et al. (2003) was that both the feral goat and bighorn sheep at issue in the study carried *Pasteurella* spp. strains (Rudolph et al. 2003). The study, however, did not show whether *Pasteurella* spp. was passed from the feral goat to the bighorn sheep or vice versa (Rudolph et al. 2003) ("Because samples were not obtained from the animals prior to contact, the direction of transmission could not be ascertained with certainty.").

Perhaps the most significant finding of the Rudolph et al. (2003) study, though, was that the *Pasteurella* spp. strains carried by the feral goat at issue WERE NOT a cause of bighorn die-offs (Rudolph et al. 2003). In Rudolph et al. (2003) it states, "there is no evidence that those organisms were associated with subsequent disease or deaths." (emphasis added). In fact, Rudolph et al. (2003) states, "we know of no other information regarding transfer of potentially lethal *Pasteurella* spp. between domestic goats and free-ranging bighorn sheep." (emphasis added). Despite this complete lack of evidence, Rudolph et al. (2003) states, "we believe that goats can serve as a reservoir" of *Pasteurella* spp. and recommends that interactions between goats and bighorn sheep should be avoided.

Although the Rudolph et al. (2003) study did not involve pack goats and was unable to provide any evidence that goats of any kind transmit disease to bighorn sheep and cause bighorn sheep die-offs, Rudolph et al. (2003) adds: "Pack goats have gained popularity for use on public lands. We recommend that individuals with pack goats have total control of their animals when in or near bighorn sheep habitat, both while on the trail and at the campsite. Likewise, we recommend that any bighorn sheep should be driven away from goats to prevent nose-to-nose contact and that any bighorn sheep that does come into direct contact should be removed from the herd to prevent potential transmission of disease causing organisms to other bighorn sheep." This recommendation does not track the outcome of the Rudolph et al. (2003) study and was likely added to appease the group that funded the study (the Foundation for North American Wild Sheep). Nevertheless, NAPgA agrees that such recommendations constitute prudent management and is thus agreeable to implementing such recommendations as best management practices on the Sawtooth NF.

Dr. Margaret Highland at the Animal Disease Research Unit-ARS-USDA has provided a thorough analysis and explanation of Rudolph et al. (2003) to clear up the Sawtooth NF's and others' wrongful interpretations of the Rudolph et al. (2003) study. The analysis and explanation is provided at Exhibit 4 and is incorporated into these objections and should be considered by the Sawtooth NF.

Conclusion and Recommendations: The Sawtooth NF should correct the above reference to Rudlph et al. (2003) and explain that the reference does not show that "*Mycoplasma ovipneumoniae* are transmitted to wild sheep from domestic goats."

D. The Sawtooth NF's Reference to Jansen et al. (2006) is Misplaced and Must be Corrected.

The Sawtooth NF, citing to Jansen et al. (2006), explains that "[c]ontact can and does occur between animals from range use overlap on public land and forays of wild sheep to nearby domestic herds on private in-holdings and vice versa." EA at 90. The reference to Jansen et al. (2006) does not support this statement or the assumption that domestic goats transmit *Pasteurella* spp. or other respiratory disease to bighorn sheep.

The Jansen et al. (2006) study involved the release of 4,800 herd domestic goats near occupied bighorn sheep habitat in Arizona (Jansen et al. 2006). Jansen posits that some of these 4,800 domestic goats carried a bacterium that is associated with an ocular disease that affects domestic livestock and most wild ruminants in North America. *Id.* Several months after the domestic goats were released, clinically affected bighorn sheep were observed. *Id*. Jansen et al. (2006) suggests that the domestic goats transmitted the bacterium that is associated with the ocular disease to the bighorn sheep. *Id*. The Jansen et al. (2006) study does not indicate that a single bighorn sheep was affected by *Pasteurella* spp. after the release of 4,800 domestic goats; that a single bighorn sheep contracted pneumonia and died after contacting a domestic goat; or that there was a resulting die-off of bighorn sheep following the release of the domestic goats near bighorn sheep habitat. *Id*.

The Jansen et al. study simply is not relevant to the Sawtooth NF's assumption that domestic goats transmit *Pasteurella* spp. or other respiratory disease to bighorn sheep on the Sawtooth NF. Despite the presence of 4,800 domestic brush goats comingling with bighorn sheep, there was not a single report of pneumonia associated with the incident, even though the goats remained in bighorn sheep habitat for over 60 days. Thus, consistent with other studies, commingling of domestic goats (even 4,800 goats) with bighorn sheep does not appear to lead to respiratory disease and subsequent bighorn sheep mortality events.

Conclusion and Recommendations: The Sawtooth NF's reference to Jansen et al. (2006) does not support the above statement. The reference is not relevant to the EA and should be removed, except to the extent it is relied upon to show that even in extreme occurrences, with 4,800 goats, the transmission of disease leading to pneumonia in bighorn sheep is highly unlikely.

E. The Sawtooth NF Must Correct its References to Martin (1996) and Drew (2017) as They Do Not Support the Statement that Goats Carry Disease-Causing Organisms.

The Sawtooth NF states that "[d]omestic sheep and goats carry these disease-causing organisms," and cites to Martin (1996) and Drew (2017) for such statement. It is not clear what "disease-causing organisms" the Sawtooth NF is referring to, as the previous sentence only states that "*Mycoplasma ovipneumoniae* are transmitted to wild sheep from domestic goats." That is only ONE disease-causing organism.

Further, the Martin (1996) study is not a study concerning disease transmission between bighorn sheep and domestic goats, so that study does not appear to support the statement as it applies to domestic goats. The Drew (2017) study did involve domestic goats, but was not a study concerning *Mycoplasma ovipneumoniae*, the alleged disease-causing organism of most

concern. Rather, the Drew (2017) study found the presence of certain other pathogens in certain domestic goats, but of importance, the study did not find *Mannheimia haemolytica* in any of the 48 pack goats studied. Further, the study found that pack goats receive a high degree of veterinary attention. Overall, the study concluded, "[i]t is not known if domestic goats can transmit Pasteurellaceae or other pathogens found in this study readily to wild bighorn sheep."

Conclusion and Recommendation: The Sawtooth NF's statement that domestic goats "carry these disease-causing organisms" is not supported by the references to Martin (1996) and Drew (2017). As a result, the statement should be removed from the EA. In particular, there is no scientific information that pack goats generally carry *M. ovi*, the disease-causing organism of most concern. That should be discussed and considered in the EA.

F. The Sawtooth NF Must Provide References to the Science it Relies Upon in the EA and Allow the Public an Opportunity to Review and Provide Comments/Objections on Such Science.

In Forest Service Response to Comment Number CC-01, the Sawtooth NF states that "[a]ccording to Cassirer and others 2017: 'Domestic sheep and domestic goat *Mycoplasma ovipneumoniae* lineages were both detected in bighorn sheep populations." EA at 170. The Sawtooth NF then states, "[t]hese studies show that transmission can occur." *Id*. There is no reference to "Cassirer and others 2017" in the References at EA 131 – 142. What is this reference to? The Sawtooth NF must provide this reference to the public and allow the public an opportunity to review the reference and provide comments and objections concerning the reference.

In addition, the Sawtooth NF in Forest Service Response to Comment Number NPH-02 provides a quote from "Heinse and others 2009" concerning "domestic goats carrying *Mycoplasma ovipneumoniae*." Again, the References at EA 131-142 do not contain a reference to "Heinse and others 2009," so it is unclear where the quote is from? Please provide the reference to the public and allow the public the opportunity to review it and provide comments and objections following such review.

Conclusion and Recommendations: The Sawtooth NF does not provide the above-listed references to the public and should therefore either provide the references to the public and allow the public an opportunity to review them and comment on/object to them, or exclude the references and discussion related thereto from the EA.

G. The Sawtooth NF Must Correct Its Statements Indicating that Pack Goats Pose a Threat to Wild Sheep Populations.

The Sawtooth NF indicates that "[w]hile not all outbreaks of pneumonia in wild sheep have confirmed contact with domestic sheep or goats, the preponderance of scientific evidence shows that association with domestic sheep and goats poses a threat to the continued conservation and restoration of wild sheep populations." EA at 90. The Sawtooth NF does not present ANY scientific evidence showing that the association of pack goats and wild sheep poses a threat to the continued conservation and restoration of wild sheep populations. Certainly, there

is not a "preponderance" of such evidence. This statement is inaccurate and inapplicable to pack goats and should thus be removed by the Sawtooth NF.

Further, the Sawtooth NF provides "[f]or a recent review of the literature and summary of this issue see Pils and Wilder 2017." EA at 90. The reference to Pils and Wilder 2017 is premature as such report is currently subject to the ongoing objection process on the National Forest. The science referenced therein has been objected to by NAPgA, other groups and members of the public. NAPgA's objections can be found at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd572052.pdf. Other objections can be found at https://www.fs.usda.gov/detailfull/shoshone/landmanagement/planning/?cid=fseprd572007&width=full. To the extent the Sawtooth NF wishes to reference Pils and Wilder 2017, NAPgA's objections thereto should be addressed and incorporated here. These objections can be accessed via the link above and are available in hardcopy upon request.

Conclusion and Recommendations: The Sawtooth NF may not rely on conclusory statements unsupported by data, authorities, or explanatory information. Here, the Sawtooth NF has implicated pack goats in disease transmission to wild sheep populations without providing any scientific evidence indicating that pack goats pose a threat. As result, the above statement should be correct to exclude pack goats. Further, the Sawtooth NF's reliance on Pils and Wilder 2017 is premature as such report has not been finalized and is subject to revisions through a Forest Service objection process on the Shoshone National Forest. As a result, the Sawtooth NF should not rely on such report.

3. The Sawtooth NF Must Analyze and Explain the Risk of Contact and Disease Transmission Between Pack Goats and Bighorn Sheep on the HB-WC Wilderness.

The Sawtooth NF makes a number of statements concerning "risk," but does not explain what "risk" is or provide any sort of qualitative or quantitative analysis of "risk." These statements include:

- The Sawtooth NF states, "[m]aintaining appropriate and reasonable spatial and temporal separation between wild sheep and domestic sheep and goats is the most effective tool available for minimizing risk of disease transmission between species (WAFWA WSWG 2012)." EA at 90.

- With regard to the direct and indirect effects of Alternative A, the Sawtooth NF provides that the "8 management practices to minimize the risk of contact" "would reduce the risk of contact compared to the existing condition, which has no management practices in place to reduce risk of contact." EA at 100. Further, "[o]utside of the pack goat prohibited areas of the wilderness, some risk of contact would still exist." *Id.*

- The Sawtooth NF also adds in Forest Service Response to Comment Number KD-01 that it "is not aware of studies that determined the risk of disease transmission from domestic goats to bighorn sheep, only that it can occur. Proposed action is

an attempt to keep risk low while still allowing pack goat use of most of the HB-WC Wilderness." EA at 294.

- The Sawtooth NF adds in Forest Service Response to Comment Number NAPgA-05 that "[d]isease transmission is possible even with low prevalence of occurrence. The proposed action (Alternative A) is an attempt to keep risk of disease transmission low while still allowing pack goat use." EA at 302.

- The Sawtooth NF in Forest Service Response to Comment Number NAPgA-07 adds that "[t[here is a risk of contact when domestic goats and bighorn sheep are in the same area. Bighorn sheep can approach goats." EA at 302.

- With regard to testing, the Sawtooth NF provides in Forest Service Response to Comment Number NAPgA-05, "[t]esting does not eliminate the risk of disease transmission. Additionally how tests are done and the frequency of tests affects the results and reliability of tests. Goats may be exposed to disease from other goats after testing." EA at 302; *see also* EA at 170, 181, 303.

- Further, the Sawtooth NF in Forest Service Response to Comment Number NAPgA-06 adds "[i]ndividual animals can be carriers without showing symptoms." EA at 302.

While the Sawtooth NF mentions "risk" and discusses keeping "risk" low, it never actually states what the risk is of contact and disease transmission between pack goats and bighorn sheep is on the HB-WC Wilderness. This information should be provided. The Sawtooth NF recognizes that "[p]ack goat use in the wilderness areas is low, as only one group traveling with 13 goats registered in 2016, and wilderness rangers reported no encounters with packgoats in the MA from 2004 through 2015." EA at 48. With no pack goat use in most years, the risk of contact and disease transmission would be zero. That cannot be lessened by a closure to packgoats or requirements on handling of goats. Likewise, pack goats have been shown to rarely carry *M. ovi*, the pathogen of greatest concern for disease transmission. A pack goat without disease cannot transmit disease, so, again, the risk of disease transmission would be zero. Further, with so few pack goats used on the HB-WC Wilderness, and with guidelines in place for handling such goats, the potential for contact between a pack goat and bighorn sheep would be near zero. Indeed, such contact has never happened in the wild. If there is such little risk, it is unclear how such risk can be lessened or how it is useful to reduce already extremely low risk?

Conclusion and Recommendations: Before undertaking management action concerning the risk of contact and disease transmission between pack goats and bighorn sheep on the HB-WC Wilderness, the Sawtooth NF should provide an analysis of the current risk posed by pack goats. This could be done with a qualitative or quantitative risk assessment. Regardless, the Sawtooth NF has not presented any scientific information indicating that pack goats pose a significant risk. Rather, pack goats rarely use the HB-WC Wilderness, rarely carry disease and are very unlikely to contact a bighorn sheep, particularly when handled according to established guidelines, so pack goats would appear to pose negligible risk. Why then are they being prohibited from the HB-WC Wilderness? The Sawtooth NF must answer this threshold question. The Sawtooth NF's explanation for prohibiting pack goat use runs counter to the evidence before

the agency. Without establishing significant risk, the Sawtooth NF's prohibition on pack goat use is unjustified.

4. The Sawtooth NF Must Correct its Analysis in the EA or Otherwise Prepare an Environmental Impact Statement as the Proposed Action Would Have a Significant Effect on the Environment.

A threshold question in a NEPA analysis is whether a proposed project will "significantly affect" the environment, thereby triggering the requirement for an EIS. 42 U.S.C. § 4332(2)(C). As a preliminary step, an agency may prepare an EA to decide whether the environmental impact of a proposed action is significant enough to warrant preparation of an EIS. 40 C.F.R. §§ 1501.4(c), 1508.9(a)(1) (Council on Environmental Quality regulations); 36 C.F.R. § 220.7 (Forest Service regulations). Courts rely on NEPA regulations, promulgated by the Council on Environmental Quality ("CEQ"), to guide their review of an agency's determination of "significance." *See* 40 C.F.R. § 1508.27; *see also Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 372 (1989) (CEQ regulations entitled to substantial deference). Whether there may be a "significant" effect on the environment requires consideration of two broad factors: context and intensity. 40 C.F.R. § 1508.27; *National Parks & Conservation Ass'n v. Babbitt,* 241 F.3d 722, 731 (9th Cir.2001)).

CEQ regulations provide relevant factors for evaluating intensity, including:

> (1) beneficial and adverse impacts;
>
> (2) the degree to which public health and safety are affected;
>
> (3) unique characteristics of the geographic area;
>
> (4) the degree to which impacts are likely to be controversial;
>
> (5) the degree to which impacts are highly uncertain or involve unique or unknown risks;
>
> (6) the degree to which the action establishes a precedent for future actions with significant impacts;
>
> (7) cumulative impacts;
>
> (8) effects on scientific, cultural, or historic resources;
>
> (9) the degree to which the action may adversely affect a threatened or endangered species;
>
> (10) whether the action threatens to violate any law which protects the environment.

40 C.F.R. § 1508.27(b).

With regard to the EA prepared by the Sawtooth NF, and in terms of context, Alternative A would prohibit pack goats on 26,773 acres (29%) of the HB-WC Wilderness, while on the remaining portion of the Wilderness, pack goat users would be required to adopt certain measures for handling goats. EA at 55-56. The interests of pack goat users would be greatly and negatively affected. In terms of intensity, the following factors are relevant:

(1) beneficial and adverse impacts:

The proposed action would adversely impact pack goat users by prohibiting pack goat use on a large portion of the HB-WC Wilderness. Pack goat users would also be impacted by new requirements for handling goats. In terms of beneficial impacts of the proposed action, there would not appear to be any, as the likelihood of disease transmission from pack goats to bighorn sheep is so low and such transmission has never occurred before on the Sawtooth NF, so regardless of a prohibition, it is very unlikely that pack goats could or would transmit disease to bighorn sheep.

(4) the degree to which impacts are likely to be controversial:

The proposed action to close a large portion of the HB-WC Wilderness to pack goat users is highly controversial. There has never been a documented case of disease transmission from a pack goat to a bighorn sheep in the wild. The possibility of a pack goat carrying disease-causing organisms is very low. The Sawtooth NF simply does not have the science to show that pack goats pose a significant risk of disease transmission to bighorn sheep on the HB-WC Wilderness. As a result, the closure of part of the Wilderness without such support is quite controversial. Demonstrating this controversy, NAPgA has successfully litigated over the Forest Service's misuse of science in the NEPA process.

(5) the degree to which impacts are highly uncertain or involve unique or unknown risks:

The Sawtooth NF has not provided any scientific information indicating that pack goats have or will likely transmit disease to bighorn sheep on the HB-WC Wilderness. The likelihood simply does not exist. Yet, the Sawtooth NF comes up with highly uncertain and/or unknown impacts as justification for a closure of a portion of the Wilderness to pack goat use and for adding requirements for handling goats. Despite the fact that pack goats rarely carry *Mycoplasma ovipneumoniae*, the pathogen of greatest concern for disease transmission, the Sawtooth NF states there is still a concern for disease transmission. So, commenters proposed that pack goats be tested for such pathogen. The Sawtooth NF then stated that even with testing and confirmation that a pack goat was not a carrier of *M. ovi*, the pack goat could somehow mysteriously still contract the pathogen after testing. *See* EA at 170, 181, 302, 303. Since, *M. ovi* also affects pack goats, resulting in noticeable symptoms, commenters stated that pack goat users could then identify such symptoms and exclude such goat from use. The Sawtooth NF replied with an unsupported statement that "[i]ndividual animals can be carriers without showing symptoms." *Id.* at 302.

So, after a generally disease-free pack goat was confirmed not be a carrier of *M. ovi*, but that pack goat was somehow mysteriously able to contract *M. ovi* after testing, but show

no symptoms of such, the Sawtooth NF states there is a risk of contact between this pack goat and bighorn sheep, as "[b]ighorn sheep can approach goats." *Id.* at 302. Not only would a bighorn sheep have to approach goats, it would also have to approach humans and physically interact with said goats in front of the humans, as humans are present with pack goats and *M. ovi* is generally transmitted via physical interaction between species. The requirements for handling goats would likely also have to be ignored for such contact to take place. Even if that highly, highly unlikely scenario played out, there is still no research indicating that such bighorn sheep would contract *M. ovi* and develop pneumonia, leading to a bighorn sheep die-off. The available research shows that even when domestic goats are purposefully infected with *M. ovi* and forced into a pen with stressed and susceptible bighorn sheep, both species experience symptoms of *M. ovi* and then they both recover, without dying. The scenario by which a die-off would occur is not possible or so highly unlikely that the risk of such an event is negligible. Thus, the impacts here are highly uncertain or involve unique or unknown risks.

(6) the degree to which the action establishes a precedent for future actions with significant impacts:

If the Sawtooth NF closes a large portion of the HB-WC Wilderness to pack goat users, there is a high likelihood that other Forests and public land agencies will adopt similar management direction in dealing with pack goat use in areas in or near bighorn sheep habitat. As the Sawtooth NF itself has demonstrated, it looks to other Forests for management direction and scientific information. The Sawtooth NF here as relied on the Shoshone National Forest's decision-making and its science review. *See* EA at 90 (citing Pils and Wilder 2017). If the Sawtooth NF makes the decision to close occupied bighorn sheep habitat to pack goat use, there is a very high degree of likelihood that other Forests and public land agencies will follow suit. Such decision sets a bad precedent for managing pack goat use.

Conclusion and Recommendation: The presence of any one of the above factors may be sufficient to deem the Sawtooth NF's action significant, requiring the preparation of an EIS. As a result, and to the extent the Sawtooth NF does not adopt the management direction recommended by NAPgA, the Sawtooth NF must prepare an EIS analyzing the risk of disease transmission from pack goats to bighorn sheep on the HB-WC Wilderness, or otherwise provide a convincing statement of reasons why potential effects are insignificant. The other Forests that have considered disease transmission issues, such as the Shoshone National Forest, have prepared detailed EISs as well as quantitative and/or qualitative risk assessments. To justify a closure, such detailed analysis is necessary here.

NAPgA has raised substantial questions about the effects of the proposed action, particularly concerning the Sawtooth NF's statements that pack goats somehow pose a significant risk of disease transmission to bighorn sheep on the HB-WC Wilderness. Such risk does not exist. In following, the Sawtooth NF should remove the prohibition on pack goat use and provide guidelines for handling goats on the Wilderness that will ensure that the risk remains nonexistent.

From: Highland, Margaret
Sent: Friday, May 05, 2017 9:59 AM
To: 'Steve Kilpatrick' <skilpatrick@wyomingwildsheep.org>; 'Ron Smith' <rsagebrushsmith@aol.com>; canyonshadows@wyoming.com; johnmionne@gmail.com; packgoat@icloud.com; ctrulock@fs.fed.us; sschacht@fs.fed.us; brandonjhouck@fs.fed.us; rvandervoet@blm.gov; Lander_WYMail@blm.gov; daryl.lutz@wyo.gov; pat_hnilicka@fws.gov; sara@bighorn.org
Cc: 'Knowles, Don (dknowles@vetmed.wsu.edu)' <dknowles@vetmed.wsu.edu>
Subject: RE: Pack Goat Meeting rescheduled

Since this may not occur before a final decision is made on the Shoshone NF, I would like to share with this group the data from the large scale pack goat study that was performed in 2016. While the ocular swabs are now and finally being tested after developing and validating PCR assays for detecting the 4 most common bacterial agents of pink eye (this process was much slower than anticipated by me), the Mycoplasma ovipneumoniae results are completed. The following, in quotes, is an email that I shared with Jim Wilder on 12/16/17. Since then we have retested all of the pack goat nasal swabs a 3 time with a more sensitive standard PCR method, the update on the findings from this follow the email correspondence.

"Over the last year we (ADRU-ARS-USDA), in collaboration with APHIS, were able to complete a fairly large scale surveillance study testing nasal shedding/presence of *Mycoplasma ovipneumoniae* in pack goats. We also tested goats that were housed with or on the same premises as domestic goats that were reported by the owner to be used specifically for packing. We also collected ocular swabs from participating goats to test for the presence of the common agents of small ruminant pink eye (*Chlamydophila* sp and *Mycoplasma conjunctivae, Moraxella ovis, and Acheloplasma oculi*); the ocular swabs are still being analyzed, with hopes of completing analysis this month. Upon analysis completion of the ocular swabs, the plan is to report the results by publishing in a peer-reviewed scientific journal by the end of winter/early spring.
I would like to share with you the following results from the nasal swab samples that were collected:

Nasal swabs were collected 3 times, at 1 month minimum intervals, from participating goats (aside from the handful of animals that were sold, removed from the study as per the owners discretion, or entered into the study late so had fewer sample time points). A couple of the premises had 4 or 5 samples collected. Duplicate nasal swabs were collected at each time point. 1 swab was tested in our USDA laboratory and samples that tested negative were then submitted to an independent laboratory for confirmation of the results (WADDL in Pullman, WA was the independent laboratory).
We tested a total of 576 domestic goats from 84 premises which included the following states (# of premises in parentheses after each): AZ (3), CA (6), CO (7), ID (26), KS (1), MT (5), NM (1), NV (2), OR (9), UT (5), WA (14), WY (4), VT (1). (I believe I had reported that there were 88 premises in earlier info that I shared with Mark P…..I forgot to deduct the 4 premises scattered in 4 eastern states that we didn't get tested).
Of all of the premises tested, we confirmed *M. ovipneumoniae* to be present in nasal

secretions from goats on 2 premises, limited to kids ≤2 weeks of age at only one test time. We collected additional swabs from 1 of these premises for 5 times total sample collections and the last 3 collection points had no detected *M. ovipneumoniae* and interestingly, all of the adult goats (9 of them) never had *M. ovipneumoniae* detected….the kids (there were 15 of them total) had 3 positives at time point 1, and 2 different kids positive at time point 2 (1st 3 positive were negative at this 2nd time point) and all goats on the premises were negative the last 3 sample collections.
As for the other premises that had a handful of positive kids: I repeat swabbed several of them 1 or 2 more times and they too were subsequently negative on the repeat samplings. This "kid phenomenon" is interesting…….I'll leave it at that as to save typing time in this already lengthy email, but am happy to discuss further some time if you are interested.
One additional premises that had *M. ovipneumoniae* detected 2 of the 3 sample times had a small group of yearling pack goats that were being housed at fence line with an 'open' breeding herd of registered Boer goats that were used for shows and sent out to farms for sire purposes. I instructed that owner to move his packers as soon as possible away from the large group of traveling Boer goats…….I suspect that his pack goats may clear (not shed) *M. ovipneumoniae* without the constant potential exposure, as all of his goats were negative on the 3 sample collection (I'd be happy to discuss why I suspect this may be possible with you too, if you're interested).

The other 81 premises had no confirmed *M. ovipneumoniae* present on any of the nasal swabs collected. Of interest to your local and nearby area, none of the WY, UT, CO, MT herds had confirmed *M. ovipneumoniae* detection at any of the time points. 1 of the places with "kid detected *M. ovipneumoniae*" was in ID, but these kids are the ones that have sense been negative and the adults never positive.
While nothing is ever 100% risk free in life, I think this data strongly supports that there is a very low prevalence of *M. ovipneumoniae* in goats, at least those raised and kept in closed and typically small groups (however, a few of the premises that I tested had 20+ goats though and still negative….even the premises that tested their milk goats).

I would also like to take the time here to give warning that unless researchers and/or diagnosticians are looking beyond the common published techniques for identifying *M. ovipneumoniae*, there is a chance that false positive results will occur…particularly in goats. For example, we know that the published PCR primers, referred to as "LM primers" and qPCR techniques that have been developed in the past based on these primers can (and do) result in false positive results. By "looking beyond" I mean perform standard PCR to amplify a minimum of 2 regions of the bacterial genome and sequence the products/amplicons…..and making sure that the products/amplicons match well-characterized strains of *M. ovipneumoniae* (ie. strains that are characterized by reputable groups such as ATCC). Mycoplasmas are tricky, to say the least. Again, I'm happy to discuss more should you be interested.

Please feel free to let me know, either by email or phone (listed in signature line), if you have questions, comments, or concerns about the information provided herein or if you have anything that you would like to further discuss with me regarding the bighorn pneumonia phenomenon."

Update following repeated testing using a more sensitive method of detection:
Five of the 83 premises tested (6%) had M. ovipneumoniae identified during the repeat nasal sample collections. Premises that had M. ovipneumoniae detected in any the goats

had at least 7 goats housed on the premises. M. ovipneumoniae was confirmed to be present on the nasal swabs collected from 30 of the 576 total goats tested, meaning that 94.8% of the goats tested had no M. ovipneumoniae detected at any of the sample collection time points. Of the 30 total M. ovipneumoniae positive goats, 27 (or 90%) of the were ≤1 year of age, and 23 of them were <5 months of age.
During the 2016 North American Pack goat annual gathering ("the Rendy") held in Oregon, I sampled in total 27 adults and 2 kid goats whose owners brought them to the sample collection site that I set up. Most of these goats were already part of the large pack goat/domestic goat surveillance study and I asked owners if they minded me taking an extra nasal swab from their animals with the thought that perhaps the stressor of travelling or bringing a large group of goats together may result in shedding of M. ovipneumoniae from animals that it hadn't been detected on during the first round of sample collections and it also gave the opportunity to add a couple more premises to the study. M. ovipneumoniae **was not detected** on any of the swab samples collected at the Rendy.

It's unfortunate how long research takes, particularly with something as time sensitive as this seems to be, as I had truly hoped that this entire study would be out in published in a peer-reviewed form at this point (April was my goal). Hoping now for June with fingers crossed that all of the ocular swab testing goes smoothly….and more importantly accurately with good specificity and sensitivity.

Thank you and I look forward to participating in the Pack Goat meeting whenever the final date is decided upon.

Maggie

Margaret A. Highland, DVM, PhD, Dipl. ACVP
Animal Disease Research Unit-ARS-USDA (VMO Researcher)
Washington Animal Disease Diagnostic Laboratory (Adjunct Pathologist)
School for Global Animal Health (Adjunct Faculty)
Washington State University
Pullman, WA 99164

Office phone: 509-335-6327
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ACCESSION FORM FOR GENERAL DIAGNOSTICS

Washington Animal Disease Diagnostic Laboratory

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UPS, FedEx or Courier shipping address:
Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034

Phone: (509) 335-9696
FAX: (509) 335 7424
E-Mail: waddl@vetmed.wsu.edu

2016 – 6030
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: ,md
05/10/16
form: 2 pages

Please type or use black ink and print clearly.

Veterinarian or Case Coordinator: Last Name: Highland First Name: Maggie

Clinic: ADRU-ARS-USDA

Street address: ADBF-WSU Mailing Address or PO Box:

City: Pullman State: WA Zip: 99164

Phone: 509-335-6327 Fax: 509-335-8328 E-mail: mah@vetmed.wsu.edu

Owner: Last Name first: same as above Guardian Name: (if owner is under 18)

Farm Name: First Time Submitter? ☐ Yes ☐ No

Street address: Mailing Address or PO Box:

City: State: Zip:

Phone: Fax: E-mail:

Billing: ☑ Owner ☐ Clinic ☐ 3rd Party (preapproval required) Please note: WADDL policy is to bill the clinic if provided, unless prepaid.

Reporting Preference: ☐ Mail ☐ Fax ☑ Web access - register on web site at http://waddl.vetmed.wsu.edu

Please fill out completely as possible:

Specimen(s) Submitted: nasal swabs
(Please use WADDL Animal ID Sheet for multiple animals.)

Date Collected: April 2016
Date Shipped:

Tests Requested:
☐ Necropsy ☐ Virology ☐ Bacteriology ☐ IHC
☐ Histopathology ☐ Serology ☐ Mycoplasma culture ☑ PCR
☐ Toxicology ☐ Fungal Culture ☐ Parasitology ☐ Other:

Note: WADDL reserves the right to modify the tests requested for more efficient case work-up and / or to send specimens to outside laboratories to perform testing not done at WADDL.

Animal ID (name/tag#)	Species	Breed	Age	Sex	Animal Weight
see multiple animal form	goat	multiple	1mo-12yrs		

Location of Lesion	No. in group	No. Dead	No. Sick	No. on Premises	Duration of Problem
N/A					N/A

* Was animal euthanized? If so, what method? N/A

Additional History: Vaccinations, signs, stress factors, treatments, post mortem findings, pertinent feed or feed additives, clinical lab results, previous WADDL Case Numbers. (Attach additional sheets as necessary.)

Please save any remaining DNA isolations and call Maggie for pick up.

Bill to ADRU-ARS-USDA acct #RSA 2540-1080

Samples were maintained [redacted] on ice then frozen w/in 2 days of collection + kept at -20°C since.

WADDL is an official brucellosis testing laboratory. All serology for brucellosis, including abortion screens, requires identification of animals, date of sample collection, and signature of an accredited veterinarian attesting to the following statement:
"I certify that the specimens submitted with this form were collected by me from the animal(s) described on the date indicated."

Veterinarian's, Clinician's or Owner's Signature:	Condition(s) Suspected:

Form WADDL 001.1 Version 09-15

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

Washington Animal Disease Diagnostic Laboratory
College of Veterinary Medicine, Washington State University

Mailing address:	Shipping address:
P.O. Box 647034	Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034	Pullman, WA. 99164-7034
Phone: (509) 335-9696	FAX: (509) 335-7424

E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

2016–6030
Ref Vet: Highland, Margaret
Owner: USDA–ARS–ADRU
Breed: Domestic Goat
Routing: ,md

Owner: ADRU-ARS-USDA

Veterinarian: Maggie Highland

TEST(S) REQUESTED: Mycoplasma ovipneumoniae qPCR

05/10/16

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal
1	[redacted]_3_A	26	[redacted]_5_F	51	[redacted]_3_D	76	
2	[redacted]_3_B	27	[redacted]_5_G	52	[redacted]_7_A	77	
3	[redacted]_3_C	28	[redacted]_5_H	53	[redacted]_7_B	78	
4	[redacted]_11_A	29	[redacted]_6_A	54	[redacted]_7_C	79	
5	[redacted]_11_B	30	[redacted]_6_B	55	[redacted]_7_D	80	
6	[redacted]_11_C	31	[redacted]_6_C	56	[redacted]_7_E	81	
7	[redacted]_11_D	32	[redacted]_6_D	57	[redacted]_11_A	82	
8	[redacted]_16_A	33	[redacted]_6_E	58	[redacted]_11_B	83	
9	[redacted]_16_B	34	[redacted]_6_F	59	[redacted]_11_C	84	
10	[redacted]_4_A	35	[redacted]_6_G	60	[redacted]_11_D	85	
11	[redacted]_4_B	36	[redacted]_8_A	61	[redacted]_12_A	86	
12	[redacted]_4_C	37	[redacted]_8_B	62	[redacted]_12_B	87	
13	[redacted]_4_D	38	[redacted]_8_C	63	[redacted]_12_C	88	
14	[redacted]_4_E	39	[redacted]_8_D	64	[redacted]_12_D	89	
15	[redacted]_4_F	40	[redacted]_9_A	65	[redacted]_12_E	90	
16	[redacted]_4_G	41	[redacted]_9_B	66	[redacted]_12_F	91	
17	[redacted]_10_A	42	[redacted]_9_C	67	[redacted]_12_G	92	
18	[redacted]_10_B	43	[redacted]_2_A	68	[redacted]_12_H	93	
19	[redacted]_10_C	44	[redacted]_2_B	69	[redacted]_12_I	94	
20	[redacted]_10_D	45	[redacted]_2_C	70	[redacted]_12_J	95	
21	[redacted]_5_A	46	[redacted]_2_D	71	[redacted]_12_K	96	
22	[redacted]_5_B	47	[redacted]_2_E	72	[redacted]_12_L	97	
23	[redacted]_5_C	48	[redacted]_3_A	73		98	
24	[redacted]_5_D	49	[redacted]_3_B	74		99	
25	[redacted]_5_E	50	[redacted]_3_C	75		100 *	

* For over 100 samples, please copy this form and continue numbering.

Washington Animal Disease Diagnostic Lab

P.O. Box 647034
Pullman, WA 99164-7034
Telephone : (509) 335-9696
Fax : (509) 335-7424

Dr. Margaret Highland
USDA-ARS-ADRU
WSU - 3003 ADBF

Pullman, WA 99164-6630

Case#: 2016-6030
Report Date: 05/16/16

Submittal Date: 05/10/16 | Species: Domestic Goat | Age:
Owner: USDA-ARS-ADRU | Sex:

Final Report:

Molecular Diagnostics- Reported on 05/16/16 Authorized by Daniel Bradway, Lab Manager

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_3_A	Nasal swab	Not detected
[redacted]_3_B	Nasal swab	Not detected
[redacted]_3_C	Nasal swab	Not detected
[redacted]_11_A	Nasal swab	Not detected
[redacted]_11_B	Nasal swab	Not detected
[redacted]_11_C	Nasal swab	Not detected
[redacted]_11_D	Nasal swab	Not detected
[redacted]_16_A	Nasal swab	Not detected
[redacted]_16_B	Nasal swab	Not detected
[redacted]_4_A	Nasal swab	Detected
[redacted]_4_B	Nasal swab	Detected
[redacted]_4_C	Nasal swab	Detected
[redacted]_4_D	Nasal swab	Detected
[redacted]_4_E	Nasal swab	Detected
[redacted]_4_F	Nasal swab	Detected
[redacted]_4_G	Nasal swab	Detected
[redacted]_10_A	Nasal swab	Indeterminate
[redacted]_10_B	Nasal swab	Not detected
[redacted]_10_C	Nasal swab	Not detected
[redacted]_10_D	Nasal swab	Not detected
[redacted]_5_A	Nasal swab	Not detected
[redacted]_5_B	Nasal swab	Not detected
[redacted]_5_C	Nasal swab	Not detected
[redacted]_5_D	Nasal swab	Not detected
[redacted]_5_E	Nasal swab	Not detected
[redacted]_5_F	Nasal swab	Not detected
[redacted]_5_G	Nasal swab	Not detected
[redacted]_5_H	Nasal swab	Not detected

This report contains information that is confidential and is intended for the use of the individual or entity named on page 1. If you have received this report in error, please notify WADDL immediately.

Washington Animal Disease Diagnostic Lab

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_6_A	Nasal swab	Not detected
[redacted]_6_B	Nasal swab	Not detected
[redacted]_6_C	Nasal swab	Not detected
[redacted]_6_D	Nasal swab	Not detected
[redacted]_6_E	Nasal swab	Not detected
[redacted]_6_F	Nasal swab	Not detected
[redacted]_6_G	Nasal swab	Not detected
[redacted]_8_A	Nasal swab	Not detected
[redacted]_8_B	Nasal swab	Not detected
[redacted]_8_C	Nasal swab	Not detected
[redacted]_8_D	Nasal swab	Not detected
[redacted]_9_A	Nasal swab	Not detected
[redacted]_9_B	Nasal swab	Not detected
[redacted]_9_C	Nasal swab	Not detected
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_D	Nasal swab	Not detected
[redacted]_2_E	Nasal swab	Not detected
[redacted]_3_A	Nasal swab	Not detected
[redacted]_3_B	Nasal swab	Not detected
[redacted]_3_C	Nasal swab	Not detected
[redacted]_3_D	Nasal swab	Not detected
[redacted]_7_A	Nasal swab	Not detected
[redacted]_7_B	Nasal swab	Not detected
[redacted]_7_C	Nasal swab	Not detected
[redacted]_7_D	Nasal swab	Not detected
[redacted]_7_E	Nasal swab	Not detected
[redacted]_11_A	Nasal swab	Not detected
[redacted]_11_B	Nasal swab	Not detected
[redacted]_11_C	Nasal swab	Not detected
[redacted]_11_D	Nasal swab	Not detected
[redacted]_12_A	Nasal swab	Not detected
[redacted]_12_B	Nasal swab	Not detected
[redacted]_12_C	Nasal swab	Not detected
[redacted]_12_D	Nasal swab	Not detected
[redacted]_12_E	Nasal swab	Not detected
[redacted]_12_F	Nasal swab	Not detected
[redacted]_12_G	Nasal swab	Not detected
[redacted]_12_H	Nasal swab	Not detected
[redacted]_12_I	Nasal swab	Not detected
[redacted]_12_J	Nasal swab	Not detected
[redacted]_12_K	Nasal swab	Not detected
[redacted]_12_L	Nasal swab	Not detected

PCR-Mycoplasma ovipneumoniae test comment: This assay detects only Mycoplasma ovipneumoniae. Culture is available at WADDL to detect other species of Mycoplasma if desired. Fees for culture are available on our website. Please contact the lab if Mycoplasma culture or other testing is desired.

This report contains information that is confidential and is intended for the use of the individual or entity named on page 1. If you have received this report in error, please notify WADDL immediately.

Washington Animal Disease Diagnostic Lab — **Case Tracking HALF SHEET**

Quantity/Description/Routing of Samples

72 nasal swabs

Sample Condition:	☐ Room Temp.	☐ On ice	☑ Frozen	☐ Fixed	Contents match forms: ☐ Yes ☐ No	Opened by:
Samples Received Via:	☐ US Mail	☐ FedEx	☐ Drop off		Explain below:	
	☐ UPS	☐ FedEx-R	☐ Other:			

Comments for Case Tracking: by Maggie Highland

2016 – 6030 **05/10/16**

Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: ,md

notes: 1 page

Sample Label

Form WADDL 070, Version 05-14

ACCESSION FORM FOR GENERAL DIAGNOSTICS

Washington Animal Disease Diagnostic Laboratory

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Web Site: http://waddl.vetmed.wsu.edu

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Pullman, WA. 99164-7034

Phone: (509) 335-9696
FAX: (509) 335 7424
E-Mail: waddl@vetmed.wsu.edu

2016 – 6160
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: ,md
05/12/16
form; 3 pages

Please type or use black ink and print clearly.

Veterinarian or Case Coordinator: Last Name: Highland | First Name: Maggie

Clinic: ADRU-ARS-USDA

Street address: ADBF-WSU | Mailing Address or PO Box:

City: Pullman | State: WA | Zip: 99164

Phone: 509-335-6327 | Fax: 509-335-8328 | E-mail: mah@vetmed.wsu.edu

Owner: Last Name first: same as above | Guardian Name: (if owner is under 18)

Farm Name: | First Time Submitter? ☐ Yes ☐ No

Street address: | Mailing Address or PO Box:

City: | State: | Zip:

Phone: | Fax: | E-mail:

Billing: ☑ Owner ☐ Clinic ☐ 3rd Party (preapproval required) Please note: WADDL policy is to bill the clinic if provided, unless prepaid.

Reporting Preference: ☐ Mail ☐ Fax ☑ Web access - register on web site at http://waddl.vetmed.wsu.edu

Please fill out completely as possible:

Specimen(s) Submitted: (Please use WADDL Animal ID Sheet for multiple animals.) nasal swabs

Date Collected: 4/16-5/16

Date Shipped:

Tests Requested:
☐ Necropsy ☐ Virology ☐ Bacteriology ☐ IHC
☐ Histopathology ☐ Serology ☐ Mycoplasma culture ☑ PCR
☐ Toxicology ☐ Fungal Culture ☐ Parasitology ☐ Other: _____

Note: WADDL reserves the right to modify the tests requested for more efficient case work-up and / or to send specimens to outside laboratories to perform testing not done at WADDL.

Animal ID (name/tag#)	Species	Breed	Age	Sex	Animal Weight
see multiple animal form	domestic goats	multiple	1mo-12yrs		

Location of Lesion	No. in group	No. Dead	No. Sick	No. on Premises	Duration of Problem
N/A					N/A

* Was animal euthanized? If so, what method? N/A

Additional History: *Vaccinations, signs, stress factors, treatments, post mortem findings, pertinent feed or feed additives, clinical lab results, previous WADDL Case Numbers. (Attach additional sheets as necessary.)*

Nasal swabs for M. ovipneumoniae qPCR

Please save any remaining DNA isolations and call Maggie for pick up.

Bill to ADRU-ARS-USDA acct #RSA 2540-1080

WADDL is an official brucellosis testing laboratory. All serology for brucellosis, including abortion screens, requires identification of animals, date of sample collection, and signature of an accredited veterinarian attesting to the following statement:

"I certify that the specimens submitted with this form were collected by me from the animal(s) described on the date indicated."

Veterinarian's, Clinician's or Owner's Signature: Maggie Highland | *Condition(s) Suspected:* None/Healthy Animals

Form WADDL 001.1 Version 09-15

2016–6160
Ref Vet: Highland, Margaret
Owner: USDA–ARS–ADRU
Breed: Domestic Goat
Routing: ,md

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

Washington Animal Disease Diagnostic Laboratory
College of Veterinary Medicine, Washington State University

Mailing address:	Shipping address:
P.O. Box 647034	Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034	Pullman, WA. 99164-7034
Phone: (509) 335-9696	FAX: (509) 335-7424

E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

05/12/16

Owner: ADRU-ARS-USDA

Veterinarian: Maggie Highland

TEST(S) REQUESTED: M. ovipneumoniae qPCR

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name
1	_1_A	26	_4_N	51	_5_S	76	_14_C
2	_1_B	27	_4_O	52	_5_T	77	_17_A
3	_1_C	28	_4_P	53	_5_U	78	_17_B
4	_1_D	29	_4_Q	54	_5_V	79	_17_C
5	_1_E	30	_4_R	55	_5_W	80	_17_D
6	_1_F	31	_4_S	56	_5_X	81	_17_E
7	_1_G	32	_4_T	57	_5_Y	82	_17_F
8	_7_A	33	_5_A	58	_5_Z	83	_17_G
9	_7_B	34	_5_B	59	_8_A	84	_17_H
10	_7_C	35	_5_C	60	_8_B	85	_17_I
11	_7_D	36	_5_D	61	_8_C	86	_22_A
12	_7_E	37	_5_E	62	_9_A	87	_22_B
13	_4_A	38	_5_F	63	_9_B	88	_22_C
14	_4_B	39	_5_G	64	_9_C	89	_23_A
15	_4_C	40	_5_H	65	_9_D	90	_23_B
16	_4_D	41	_5_I	66	_9_E	91	_23_C
17	_4_E	42	_5_J	67	_19_A	92	_23_D
18	_4_F	43	_5_K	68	_19_B	93	_23_E
19	_4_G	44	_5_L	69	_10_A	94	_23_F
20	_4_H	45	_5_M	70	_10_B	95	_23_G
21	_4_I	46	_5_N	71	_6_A	96	_2_A
22	_4_J	47	_5_O	72	_6_B	97	_2_B
23	_4_K	48	_5_P	73	_6_C	98	_12_A
24	_4_L	49	_5_Q	74	_14_A	99	_12_B
25	_4_M	50	_5_R	75	_14_B	100 *	_12_C

* For over 100 samples, please copy this form and continue numbering.

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

2016 – 6160
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routing: ,md
05/12/16

Washington Animal Disease Diagnostic Laboratory
College of Veterinary Medicine, Washington State University

Mailing address:	Shipping address:
P.O. Box 647034	Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034	Pullman, WA. 99164-7034
Phone: (509) 335-9696	FAX: (509) 335-7424

E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

Owner: ADRU-ARS-USDA

Veterinarian: Maggie Highland

TEST(S) REQUESTED: M. ovipneumoniae qPCR

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Anim
1	[redacted]_12_D	26		51		76	
2	[redacted]_20_A	27		52		77	
3	[redacted]_20_B	28		53		78	
4		29		54		79	
5		30		55		80	
6		31		56		81	
7		32		57		82	
8		33		58		83	
9		34		59		84	
10		35		60		85	
11		36		61		86	
12		37		62		87	
13		38		63		88	
14		39		64		89	
15		40		65		90	
16		41		66		91	
17		42		67		92	
18		43		68		93	
19		44		69		94	
20		45		70		95	
21		46		71		96	
22		47		72		97	
23		48		73		98	
24		49		74		99	
25		50		75		100 *	

* For over 100 samples, please copy this form and continue numbering.

Washington Animal Disease Diagnostic Lab

P.O. Box 647034
Pullman, WA 99164-7034
Telephone : (509) 335-9696
Fax : (509) 335-7424

Dr. Margaret Highland
USDA-ARS-ADRU
WSU - 3003 ADBF

Pullman, WA 99164-6630

Case#: 2016-6160
Report Date: 05/16/16

Submittal Date: 05/12/16
Owner: USDA-ARS-ADRU

Species: Domestic Goat

Age:
Sex:

Final Report:

Molecular Diagnostics- Reported on 05/16/16 Authorized by Daniel Bradway, Lab Manager

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_1_C	Nasal swab	Not detected
[redacted]1_D	Nasal swab	Not detected
[redacted]1_E	Nasal swab	Not detected
[redacted]1_F	Nasal swab	Not detected
[redacted]1_G	Nasal swab	Not detected
[redacted]_7_A	Nasal swab	Not detected
[redacted]_7_B	Nasal swab	Not detected
[redacted]_7_C	Nasal swab	Not detected
[redacted]_7_D	Nasal swab	Not detected
[redacted]_7_E	Nasal swab	Not detected
[redacted]_4_A	Nasal swab	Not detected
[redacted]_4_B	Nasal swab	Not detected
[redacted]_4_C	Nasal swab	Not detected
[redacted]_4_D	Nasal swab	Not detected
[redacted]_4_E	Nasal swab	Not detected
[redacted]_4_F	Nasal swab	Not detected
[redacted]_4_G	Nasal swab	Not detected
[redacted]_4_H	Nasal swab	Not detected
[redacted]_4_I	Nasal swab	Detected
[redacted]_4_J	Nasal swab	Indeterminate
[redacted]_4_K	Nasal swab	Not detected
[redacted]_4_L	Nasal swab	Not detected
[redacted]_4_M	Nasal swab	Not detected
[redacted]_4_N	Nasal swab	Not detected
[redacted]_4_O	Nasal swab	Indeterminate
[redacted]_4_P	Nasal swab	Indeterminate

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Washington Animal Disease Diagnostic Lab

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_4_Q	Nasal swab	Indeterminate
[redacted]_4_R	Nasal swab	Not detected
[redacted]_4_S	Nasal swab	Detected
[redacted]_4_T	Nasal swab	Detected
[redacted]_5_A	Nasal swab	Not detected
[redacted]_5_B	Nasal swab	Not detected
[redacted]_5_C	Nasal swab	Not detected
[redacted]_5_D	Nasal swab	Not detected
[redacted]_5_E	Nasal swab	Not detected
[redacted]_5_F	Nasal swab	Not detected
[redacted]_5_G	Nasal swab	Not detected
[redacted]_5_H	Nasal swab	Not detected
[redacted]_5_I	Nasal swab	Not detected
[redacted]_5_J	Nasal swab	Not detected
[redacted]_5_K	Nasal swab	Not detected
[redacted]_5_L	Nasal swab	Not detected
[redacted]_5_M	Nasal swab	Not detected
[redacted]_5_N	Nasal swab	Not detected
[redacted]_5_O	Nasal swab	Not detected
[redacted]_5_P	Nasal swab	Not detected
[redacted]_5_Q	Nasal swab	Not detected
[redacted]_5_R	Nasal swab	Not detected
[redacted]_5_S	Nasal swab	Not detected
[redacted]_5_T	Nasal swab	Not detected
[redacted]_5_U	Nasal swab	Not detected
[redacted]_5_V	Nasal swab	Not detected
[redacted]_5_W	Nasal swab	Not detected
[redacted]_5_X	Nasal swab	Not detected
[redacted]_5_Y	Nasal swab	Not detected
[redacted]_5_Z	Nasal swab	Not detected
[redacted]_8_A	Nasal swab	Not detected
[redacted]_8_B	Nasal swab	Not detected
[redacted]_8_C	Nasal swab	Not detected
[redacted]_9_A	Nasal swab	Not detected
[redacted]_9_B	Nasal swab	Not detected
[redacted]_9_C	Nasal swab	Not detected
[redacted]_9_D	Nasal swab	Not detected
[redacted]_9_E	Nasal swab	Not detected
[redacted]_19_A	Nasal swab	Not detected
[redacted]_19_B	Nasal swab	Not detected
[redacted]_10_A	Nasal swab	Not detected
[redacted]_10_B	Nasal swab	Not detected
[redacted]_6_A	Nasal swab	Not detected
[redacted]_6_B	Nasal swab	Not detected
[redacted]_6_C	Nasal swab	Not detected
[redacted]_14_A	Nasal swab	Not detected
[redacted]_14_B	Nasal swab	Not detected
[redacted]_14_C	Nasal swab	Not detected
[redacted]_17_A	Nasal swab	Not detected
[redacted]_17_B	Nasal swab	Not detected
[redacted]_17_C	Nasal swab	Not detected
[redacted]_17_D	Nasal swab	Not detected

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Washington Animal Disease Diagnostic Lab

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_17_E	Nasal swab	Not detected
[redacted]_17_F	Nasal swab	Not detected
[redacted]_17_G	Nasal swab	Not detected
[redacted]_17_H	Nasal swab	Not detected
[redacted]_17_I	Nasal swab	Not detected
[redacted]_22_A	Nasal swab	Not detected
[redacted]_22_B	Nasal swab	Not detected
[redacted]_22_C	Nasal swab	Not detected
[redacted]_23_A	Nasal swab	Not detected
[redacted]_23_B	Nasal swab	Not detected
[redacted]_23_C	Nasal swab	Not detected
[redacted]_23_D	Nasal swab	Not detected
[redacted]_23_E	Nasal swab	Not detected
[redacted]_23_F	Nasal swab	Not detected
[redacted]_23_G	Nasal swab	Not detected
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_12_A	Nasal swab	Not detected
[redacted]_12_B	Nasal swab	Not detected
[redacted]_12_C	Nasal swab	Not detected
[redacted]_12_D	Nasal swab	Not detected
[redacted]_20_A	Nasal swab	Not detected
[redacted]_20_B	Nasal swab	Not detected

PCR-Mycoplasma ovipneumoniae test comment: This assay detects only Mycoplasma ovipneumoniae. Culture is available at WADDL to detect other species of Mycoplasma if desired. Fees for culture are available on our website. Please contact the lab if Mycoplasma culture or other testing is desired.

This report contains information that is confidential and is intended for the use of the individual or entity named on page 1. If you have received this report in error, please notify WADDL immediately.

Washington Animal Disease Diagnostic Lab — **Case Tracking HALF SHEET**

Quantity/Description/Routing of Samples

103 nasal swabs

– Dropped off by M. Highland

Sample Condition:	☐ Room Temp.	☐ On ice	☑ Frozen	☐ Fixed	Contents match forms:		Opened by:
Samples Received Via:	☐ US Mail	☐ FedEx	☑ Drop off		☑ Yes	☐ No	
	☐ UPS	☐ FedEx-R	☐ Other:			Explain below:	

Comments for Case Tracking:

2016 – 6160
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: , md
05/12/16
notes: 1 page

Sample Label ✔

Form WADDL 070, Version 05-14

ACCESSION FORM FOR GENERAL DIAGNOSTICS

Washington Animal Disease Diagnostic Laboratory

College of Veterinary Medicine, Washington State University
Web Site: http://waddl.vetmed.wsu.edu

US Postal Service mailing address:
PO Box 647034
Pullman, WA. 99164-7034

UPS, FedEx or Courier shipping address:
Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034

Phone: (509) 335-9696
FAX: (509) 335 7424
E-Mail: waddl@vetmed.wsu.edu

2016 – 7117
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: ,md
06/02/16
form: 2 pages

Please type or use black ink and print clearly.

Veterinarian or Case Coordinator: Last Name:	Highland
First Name:	Maggie
Clinic:	ADRU-ARS-USDA
Street address:	ADBF 3033
Mailing Address or PO Box:	
City:	Pullman
State:	WA
Zip:	99163
Phone:	5-6327
Fax:	5-8328
E-mail:	mah@vetmed.wsu.edu
Owner: Last Name first:	same as above
Guardian Name: (if owner is under 18)	
Farm Name:	
First Time Submitter?	☐ Yes ☐ No
Street address:	
Mailing Address or PO Box:	
City:	
State:	
Zip:	
Phone:	
Fax:	
E-mail:	

Billing: ☐ Owner ☑ Clinic ☐ 3rd Party (preapproval required) Please note: WADDL policy is to bill the clinic if provided, unless prepaid.

Reporting Preference: ☐ Mail ☐ Fax ☑ Web access - register on web site at http://waddl.vetmed.wsu.edu

Please fill out completely as possible:

Specimen(s) Submitted: nasal swabs
(Please use WADDL Animal ID Sheet for multiple animals.)

Date Collected: May 2016
Date Shipped:

Tests Requested:
☐ Necropsy ☐ Virology ☐ Bacteriology ☐ IHC
☐ Histopathology ☐ Serology ☐ Mycoplasma culture ☑ PCR
☐ Toxicology ☐ Fungal Culture ☐ Parasitology ☐ Other: Mycoplasma ovipneumoniae qPCR

Note: WADDL reserves the right to modify the tests requested for more efficient case work-up and / or to send specimens to outside laboratories to perform testing not done at WADDL.

Animal ID (name/tag#)	Species	Breed	Age	Sex	Animal Weight
see multiple animal form	domestic goats	-	adult	-	-

Location of Lesion	No. in group	No. Dead	No. Sick	No. on Premises	Duration of Problem
N/A	N/A	N/A	N/A	N/A	N/A

** Was animal euthanized? If so, what method?*

Additional History: *Vaccinations, signs, stress factors, treatments, post mortem findings, pertinent feed or feed additives, clinical lab results, previous WADDL Case Numbers. (Attach additional sheets as necessary.)*

M. ovipneumoniae qPCR
Please save remaining DNA isolations and call Maggie for pick up.

Bill to ADRU-ARS-USDA acct #RSA 2540-1080

WADDL is an official brucellosis testing laboratory. All serology for brucellosis, including abortion screens, requires identification of animals, date of sample collection, and signature of an accredited veterinarian attesting to the following statement:

"I certify that the specimens submitted with this form were collected by me from the animal(s) described on the date indicated."

Veterinarian's, Clinician's or Owner's Signature:	*Condition(s) Suspected:*

IDENTIFICATION SHEET FOR MULTIPLE ANIMAL

(To accompany WADDL Accession form, if needed)

2016 – 7117
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routing: ,md

Washington Animal Disease Diagnostic Laboratory
College of Veterinary Medicine, Washington State University

Mailing address:	Shipping address:
P.O. Box 647034	Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034	Pullman, WA. 99164-7034
Phone: (509) 335-9696	FAX: (509) 335-7424

E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

Owner: ADRU-ARS-USDA

Veterinarian: Highland

TEST(S) REQUESTED: M. ovipneumoniae qPCR

06/02/16

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	e
1	[redacted]_13_A	26		51		76	
2	[redacted]_13_B	27		52		77	
3	[redacted]_13_C	28		53		78	
4	[redacted]_13_D	29		54		79	
5	[redacted]_15_A	30		55		80	
6	[redacted]_15_B	31		56		81	
7	[redacted]_15_C	32		57		82	
8	[redacted]_15_D	33		58		83	
9		34		59		84	
10		35		60		85	
11		36		61		86	
12		37		62		87	
13		38		63		88	
14		39		64		89	
15		40		65		90	
16		41		66		91	
17		42		67		92	
18		43		68		93	
19		44		69		94	
20		45		70		95	
21		46		71		96	
22		47		72		97	
23		48		73		98	
24		49		74		99	
25		50		75		100 *	

* For over 100 samples, please copy this form and continue numbering.

Washington Animal Disease Diagnostic Lab

P.O. Box 647034
Pullman, WA 99164-7034
Telephone : (509) 335-9696
Fax : (509) 335-7424

Dr. Margaret Highland
USDA-ARS-ADRU
WSU - 3003 ADBF

Pullman, WA 99164-6630

Case#: 2016-7117
Report Date: 06/07/16

Submittal Date: 06/02/16 | Species: Domestic Goat | Age: Adult
Owner: USDA-ARS-ADRU | Sex:

Final Report:

Molecular Diagnostics- Reported on 06/07/16 Authorized by Daniel Bradway, Lab Manager

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_13_A	Nasal swab	Not detected
[redacted]_13_B	Nasal swab	Not detected
[redacted]_13_C	Nasal swab	Not detected
[redacted]_13_D	Nasal swab	Not detected
[redacted]_15_A	Nasal swab	Not detected
[redacted]_15_B	Nasal swab	Not detected
[redacted]_15_C	Nasal swab	Not detected
[redacted]_15_D	Nasal swab	Not detected

PCR-Mycoplasma ovipneumoniae test comment: This assay detects only Mycoplasma ovipneumoniae. Culture is available at WADDL to detect other species of Mycoplasma if desired. Fees for culture are available on our website. Please contact the lab if Mycoplasma culture or other testing is desired.

This report contains information that is confidential and is intended for the use of the individual or entity named on page 1. If you have received this report in error, please notify WADDL immediately.

Washington Animal Disease Diagnostic Lab — **Case Tracking HALF SHEET**

Quantity/Description/Routing of Samples

8 nasal swabs
– dropped off by MAH

Sample Condition:	☐ Room Temp.	☐ On ice	☑ Frozen	☐ Fixed	Contents match forms: ☑ Yes	☐ No Explain below:	Opened by: NOT
Samples Received Via:	☐ US Mail	☐ FedEx	☑ Drop off				
	☐ UPS	☐ FedEx-R	☐ Other:				

Comments for Case Tracking:

2016 – 7117
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: ,md

06/02/16
nodes: 1 page

Sample Label ✓ MAH

Form WADDL 070, Version 05-14

ACCESSION FORM FOR GENERAL DIAGNOSTICS

Washington Animal Disease Diagnostic Laboratory

College of Veterinary Medicine, Washington State University
Web Site: http://waddl.vetmed.wsu.edu

US Postal Service mailing address:
PO Box 647034
Pullman, WA. 99164-7034

UPS, FedEx or Courier shipping address:
Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034

Phone: (509) 335-9696
FAX: (509) 335 7424
E-Mail: waddl@vetmed.wsu.edu

2016 – 7913
Ref Vet: Highland, Margaret
Owner:
Breed: Domestic Goat
Routed: md
06/20/16
form; 3 pages

Please type or use black ink and print clearly.

Veterinarian or Case Coordinator: Last Name: Highland	First Name: Maggie
Clinic: ADRU-ARS-USDA	
Street address: ADBF 3033	Mailing Address or PO Box:
City: Pullman	State: WA Zip: 99164
Phone: 509-335-6327	Fax: 509-335-8328 E-mail: mah@vetmed.wsu.edu
Owner: Last Name first: same as above	Guardian Name: (if owner is under 18)
Farm Name:	First Time Submitter? ☐ Yes ☐ No
Street address:	Mailing Address or PO Box:
City:	State: Zip:
Phone: Fax:	E-mail:

Billing: ☐ Owner ☑ Clinic ☐ 3rd Party (preapproval required) Please note: WADDL policy is to bill the clinic if provided, unless prepaid.

Reporting Preference: ☐ Mail ☐ Fax ☑ Web access - register on web site at http://waddl.vetmed.wsu.edu

Please fill out completely as possible:

Specimen(s) Submitted: (Please use WADDL Animal ID Sheet for multiple animals.) nasal swabs

Date Collected: June 2016
Date Shipped:

Tests Requested:
☐ Necropsy ☐ Virology ☐ Bacteriology ☐ IHC
☐ Histopathology ☐ Serology ☐ Mycoplasma culture ☑ PCR
☐ Toxicology ☐ Fungal Culture ☐ Parasitology ☐ Other: _____

Note: WADDL reserves the right to modify the tests requested for more efficient case work-up and / or to send specimens to outside laboratories to perform testing not done at WADDL.

Animal ID (name/tag#)	Species	Breed	Age	Sex	Animal Weight
see multiple animal form	domestic goats	multiple	multiple		

Location of Lesion	No. in group	No. Dead	No. Sick	No. on Premises	Duration of Problem
N/A		N/A	N/A		N/A

** Was animal euthanized? If so, what method?*

Additional History: *Vaccinations, signs, stress factors, treatments, post mortem findings, pertinent feed or feed additives, clinical lab results, previous WADDL Case Numbers. (Attach additional sheets as necessary.)*

M.ovipneumoniae qPCR on each sample.
Please save remaining DNA isolation and call Maggie for pick up or may request further testing (sequencing) be performed by WADDL, depending on the results of qPCR analyses.

Bill to ADRU-ARS-USDA acct #RSA 2540-1080

WADDL is an official brucellosis testing laboratory. All serology for brucellosis, including abortion screens, requires identification of animals, date of sample collection, and signature of an accredited veterinarian attesting to the following statement:

"I certify that the specimens submitted with this form were collected by me from the animal(s) described on the date indicated."

Veterinarian's, Clinician's or Owner's Signature: Maggie Highland

Condition(s) Suspected: N/A (surveillance)

Form WADDL 001.1 Version 09-15

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

Washington Animal Disease Diagnostic Laboratory
College of Veterinary Medicine, Washington State University
Mailing address:
P.O. Box 647034
Pullman, WA. 99164-7034
Phone: (509) 335-9696
Shipping address:
Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034
FAX: (509) 335-7424
E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

2016 – 7913 **06/20/16**

Ref Vet: Highland, Margaret
Owner:
Breed: Domestic Goat
Routing: md

Owner: ADRU-ARS-USDA

Veterinarian: Highland

TEST(S) REQUESTED: Mycoplasma ovipneumoniae qPCR

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name
1	[redacted]24_A	26	[redacted]_1_S	51	[redacted]	76	[redacted]_5_B
2	[redacted]24_B	27	[redacted]_1_T	52	[redacted]	77	[redacted]_5_C
3	[redacted]24_C	28	[redacted]_1_U	53	[redacted]	78	[redacted]_5_D
4	[redacted]_3_A	29	[redacted]_1_V	54	[redacted]	79	[redacted]_5_E
5	[redacted]_3_B	30	[redacted]_1_W	55	[redacted]	80	[redacted]_5_F
6	[redacted]_3_C	31	[redacted]_1_X	56	[redacted]	81	[redacted]_5_G
7	[redacted]_3_D	32	[redacted]_1_Y	57	[redacted]	82	[redacted]_5_H
8	[redacted]_1_A	33	[redacted]_1_Aa	58	[redacted]	83	[redacted]_5_I
9	[redacted]_1_B	34	[redacted]_1_Bb	59	[redacted]	84	[redacted]_5_J
10	[redacted]_1_C	35	[redacted]_1_Cc	60	[redacted]	85	[redacted]_5_K
11	[redacted]_1_D	36	[redacted]_1_Dd	61	[redacted]	86	[redacted]_5_L
12	[redacted]_1_E	37	[redacted]_1_Ee	62	[redacted]	87	[redacted]_5_M
13	[redacted]_1_F	38	[redacted]_1_Ff	63	[redacted]	88	[redacted]_5_N
14	[redacted]_1_G	39	[redacted]_1_Gg	64	[redacted]	89	[redacted]_5_O
15	[redacted]_1_H	40	[redacted]_1_Hh	65	[redacted]	90	[redacted]_5_P
16	[redacted]_1_I	41	[redacted]_1_Ii	66	[redacted]	91	[redacted]_4_A
17	[redacted]_1_J	42	[redacted]_1_Jj	67	[redacted]	92	[redacted]_4_B
18	[redacted]_1_K	43	[redacted]_1_Kk	68	[redacted]	93	[redacted]_2_A
19	[redacted]_1_L	44	[redacted]_1_Ll	69	[redacted]	94	[redacted]_2_B
20	[redacted]_1_M	45	[redacted]_1_Mm	70	[redacted]	95	[redacted]_2_C
21	[redacted]_1_N	46	[redacted]_1_Nn	71	[redacted]	96	[redacted]_2_D
22	[redacted]_1_O	47	[redacted]_1_Oo	72	[redacted]_4_A	97	[redacted]_2_E
23	[redacted]_1_P	48	[redacted]	73	[redacted]_4_B	98	[redacted]_2_F
24	[redacted]_1_Q	49	[redacted]	74	[redacted]_4_C	99	[redacted]_2_G
25	[redacted]_1_R	50	[redacted]	75	[redacted]_5_A	100 *	[redacted]_2_H

* For over 100 samples, please copy this form and continue numbering.

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

Washington Animal Disease Diagnostic Laboratory
College of Veterinary Medicine, Washington State University
Mailing address: P.O. Box 647034 Pullman, WA. 99164-7034 Phone: (509) 335-9696
Shipping address: Bustad Hall, Rm.155-N Pullman, WA. 99164-7034 FAX: (509) 335-7424
E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

2016 – 7913 **06/20/16**

Ref Vet: Highland, Margaret
Owner:
Breed: Domestic Goat
Routing: md

Owner: ADRU-ARS-USDA

Veterinarian: HIGHLAND

TEST(S) REQUESTED: M. ovipneumoniae qPCR

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name
1	_5_A	26	_2_A	51		76	
2	_5_B	27	_2_B	52	6_G	77	
3	_5_C	28	_2_C	53	13_A	78	
4	_5_D	29	_2_D	54	13_B	79	
5	_5_E	30	_3_A	55	13_C	80	
6	_5_F	31	_3_B	56	13_D	81	
7	_5_G	32	_3_C	57	13_E	82	
8	_5_H	33	_3_D	58	13_F	83	
9	_5_I	34	_4_A	59	-6-H	84	
10	_5_J	35	_4_B	60	-2-A	85	
11	_5_K	36	_4_C	61	-2-B	86	
12	_5_L	37	_1_A	62	-2-C	87	
13	_5_M	38	_1_B	63	-2-D	88	
14	_5_N	39	21_A	64	-2-E	89	
15	_5_O	40	_5_A	65	-2-F	90	
16	_5_P	41	_5_B	66	-2-G	91	
17	_4_A	42	_5_C	67	-2-H	92	
18	_4_B	43	_5_D	68	-2-I	93	
19	_1_A	44	_5_E	69	-2-A	94	
20	_1_B	45	_6_A	70	-2B	95	
21	_1_C	46	_6_B	71	-2-C	96	
22	_1_D	47	_6_C	72	-2-D	97	
23	_1_E	48	_6_D	73	-7-A	98	
24	_7_A	49	_6_E	74	-7-B	99	
25	_7_B	50	_6_F	75		100 *	

* For over 100 samples, please copy this form and continue numbering.

Washington Animal Disease Diagnostic Lab

P.O. Box 647034
Pullman, WA 99164-7034
Telephone : (509) 335-9696
Fax : (509) 335-7424

Dr. Margaret Highland
USDA-ARS-ADRU
WSU - 3003 ADBF

Pullman, WA 99164-6630

Case#: 2016-7913
Report Date: 07/01/16

Submittal Date: 06/20/16 Species: Domestic Goat Age:
Owner: Sex:

Final Report:

Molecular Diagnostics- Reported on 07/01/16 Authorized by Daniel Bradway, Lab Manager

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_24_A	Nasal swab	Not detected
[redacted]_24_B	Nasal swab	Not detected
[redacted]_24_C	Nasal swab	Not detected
[redacted]_3_A	Nasal swab	Not detected
[redacted]_3_B	Nasal swab	Not detected
[redacted]_3_C	Nasal swab	Not detected
[redacted]_3_D	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_1_C	Nasal swab	Indeterminate
[redacted]_1_D	Nasal swab	Not detected
[redacted]_1_E	Nasal swab	Not detected
[redacted]_1_F	Nasal swab	Not detected
[redacted]_1_G	Nasal swab	Not detected
[redacted]_1_H	Nasal swab	Detected
[redacted]_1_I	Nasal swab	Not detected
[redacted]_1_J	Nasal swab	Not detected
[redacted]_1_K	Nasal swab	Not detected
[redacted]_1_L	Nasal swab	Not detected
[redacted]_1_M	Nasal swab	Not detected
[redacted]_1_N	Nasal swab	Not detected
[redacted]_1_O	Nasal swab	Not detected
[redacted]_1_P	Nasal swab	Not detected
[redacted]_1_Q	Nasal swab	Not detected
[redacted]_1_R	Nasal swab	Not detected
[redacted]_1_S	Nasal swab	Not detected
[redacted]_1_T	Nasal swab	Not detected
[redacted]_1_U	Nasal swab	Not detected

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Washington Animal Disease Diagnostic Lab

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_1_V	Nasal swab	Not detected
[redacted]_1_W	Nasal swab	Not detected
[redacted]_1_X	Nasal swab	Not detected
[redacted]_1_Y	Nasal swab	Not detected
[redacted]_1_Aa	Nasal swab	Not detected
[redacted]_1_Bb	Nasal swab	Detected
[redacted]_1_Cc	Nasal swab	Not detected
[redacted]_1_Dd	Nasal swab	Not detected
[redacted]_1_Ee	Nasal swab	Detected
[redacted]_1_Ff	Nasal swab	Detected
[redacted]_1_Gg	Nasal swab	Indeterminate
[redacted]_1_Hh	Nasal swab	Not detected
[redacted]_1_Ii	Nasal swab	Indeterminate
[redacted]_1_Jj	Nasal swab	Detected
[redacted]_1_Kk	Nasal swab	Not detected
[redacted]_1_Ll	Nasal swab	Indeterminate
[redacted]_1_Mm	Nasal swab	Not detected
[redacted]_1_Nn	Nasal swab	Indeterminate
[redacted]_1_Oo	Nasal swab	Detected
[redacted]_4_A	Nasal swab	Not detected
[redacted]_4_B	Nasal swab	Not detected
[redacted]_4_C	Nasal swab	Not detected
[redacted]_5_A	Nasal swab	Not detected
[redacted]_5_B	Nasal swab	Not detected
[redacted]_5_C	Nasal swab	Not detected
[redacted]_5_D	Nasal swab	Not detected
[redacted]_5_E	Nasal swab	Not detected
[redacted]_5_F	Nasal swab	Not detected
[redacted]_5_G	Nasal swab	Not detected
[redacted]_5_H	Nasal swab	Not detected
[redacted]_5_I	Nasal swab	Not detected
[redacted]_5_J	Nasal swab	Not detected
[redacted]_5_K	Nasal swab	Not detected
[redacted]_5_L	Nasal swab	Not detected
[redacted]_5_M	Nasal swab	Not detected
[redacted]_5_N	Nasal swab	Not detected
[redacted]_5_O	Nasal swab	Not detected
[redacted]_5_P	Nasal swab	Indeterminate
[redacted]_4_A	Nasal swab	Not detected
[redacted]_4_B	Nasal swab	Not detected
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_D	Nasal swab	Not detected
[redacted]_2_E	Nasal swab	Not detected
[redacted]_2_F	Nasal swab	Not detected
[redacted]_2_G	Nasal swab	Not detected
[redacted]_2_H	Nasal swab	Not detected
[redacted]_5_A	Nasal swab	Not detected
[redacted]_5_B	Nasal swab	Not detected
[redacted]_5_C	Nasal swab	Not detected
[redacted]_5_D	Nasal swab	Not detected

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Washington Animal Disease Diagnostic Lab

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_5_E	Nasal swab	Indeterminate
[redacted]_5_F	Nasal swab	Not detected
[redacted]_5_G	Nasal swab	Not detected
[redacted]_5_H	Nasal swab	Not detected
[redacted]_5_I	Nasal swab	Not detected
[redacted]_5_J	Nasal swab	Not detected
[redacted]_5_K	Nasal swab	Not detected
[redacted]_5_L	Nasal swab	Not detected
[redacted]_5_M	Nasal swab	Not detected
[redacted]_5_N	Nasal swab	Not detected
[redacted]_5_O	Nasal swab	Detected
[redacted]_5_P	Nasal swab	Indeterminate
[redacted]_4_A	Nasal swab	Not detected
[redacted]_4_B	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_1_C	Nasal swab	Not detected
[redacted]_1_D	Nasal swab	Not detected
[redacted]_1_E	Nasal swab	Not detected
[redacted]_7_A	Nasal swab	Not detected
[redacted]_7_B	Nasal swab	Indeterminate
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Indeterminate
[redacted]_2_D	Nasal swab	Not detected
[redacted]_3_A	Nasal swab	Not detected
[redacted]_3_B	Nasal swab	Not detected
[redacted]_3_C	Nasal swab	Not detected
[redacted]_3_D	Nasal swab	Not detected
[redacted]_4_A	Nasal swab	Not detected
[redacted]_4_B	Nasal swab	Not detected
[redacted]_4_C	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]21_A	Nasal swab	Not detected
[redacted]_5_A	Nasal swab	Not detected
[redacted]_5_B	Nasal swab	Not detected
[redacted]_5_C	Nasal swab	Indeterminate
[redacted]_5_D	Nasal swab	Indeterminate
[redacted]_5_E	Nasal swab	Not detected
[redacted]_6_A	Nasal swab	Not detected
[redacted]_6_B	Nasal swab	Not detected
[redacted]_6_C	Nasal swab	Not detected
[redacted]_6_D	Nasal swab	Not detected
[redacted]_6_E	Nasal swab	Not detected
[redacted]_6_F	Nasal swab	Not detected
[redacted]_6_G	Nasal swab	Not detected
[redacted]_6_H	Nasal swab	Not detected
[redacted]_13_A	Nasal swab	Not detected
[redacted]_13_B	Nasal swab	Not detected
[redacted]_13_C	Nasal swab	Not detected
[redacted]_13_D	Nasal swab	Not detected

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Washington Animal Disease Diagnostic Lab

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.03.17

Animal	Specimen	Result
[redacted]_13_E	Nasal swab	Not detected
[redacted]_13_F	Nasal swab	Not detected
[redacted]2_A	Nasal swab	Not detected
[redacted]2_B	Nasal swab	Not detected
[redacted]2_C	Nasal swab	Not detected
[redacted]2_D	Nasal swab	Not detected
[redacted]2_E	Nasal swab	Not detected
[redacted]2_F	Nasal swab	Not detected
[redacted]2_G	Nasal swab	Not detected
[redacted]2_H	Nasal swab	Detected
[redacted]2_I	Nasal swab	Not detected
[redacted]2_A	Nasal swab	Not detected
[redacted]2_B	Nasal swab	Not detected
[redacted]2_C	Nasal swab	Not detected
[redacted]2_D	Nasal swab	Not detected
[redacted]7_A	Nasal swab	Not detected
[redacted]7_B	Nasal swab	Not detected

PCR-Mycoplasma ovipneumoniae test comment: This assay detects only Mycoplasma ovipneumoniae. Culture is available at WADDL to detect other species of Mycoplasma if desired. Fees for culture are available on our website. Please contact the lab if Mycoplasma culture or other testing is desired.

This report contains information that is confidential and is intended for the use of the individual or entity named on page 1. If you have received this report in error, please notify WADDL immediately.

Washington Animal Disease Diagnostic Lab — **Case Tracking HALF SHEET**

Quantity/Description/Routing of Samples

149 dry swabs

2016 – 7913 06/20/16

Ref Vet: Highland, Margaret
Owner:
Breed: Domestic Goat
Routed: md

notes: 1 page

Sample Condition:	☐ Room Temp.	☐ On ice	☒ Frozen	☐ Fixed	Contents match forms: ☒ Yes ☐ No	Opened by:
Samples Received Via:	☐ US Mail	☐ FedEx	☒ Drop off		Explain below:	
	☐ UPS	☐ FedEx-R	☐ Other:			

Comments for Case Tracking:

Sample Label ✓

Form WADDL 070, Version 05-14

ACCESSION FORM FOR GENERAL DIAGNOSTICS

Washington Animal Disease Diagnostic Laboratory

College of Veterinary Medicine, Washington State University
Web Site: http://waddl.vetmed.wsu.edu

US Postal Service mailing address:
PO Box 647034
Pullman, WA. 99164-7034

UPS, FedEx or Courier shipping address:
Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034

Phone: (509) 335-9696
FAX: (509) 335 7424
E-Mail: waddl@vetmed.wsu.edu

2016 – 10050
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: md
08/04/16
form; 3 pages

Please type or use black ink and print clearly.

Veterinarian or Case Coordinator: Last Name: Highland	First Name: Maggie
Clinic: ADRU-ARS-USDA	
Street address: ADBF 3033	Mailing Address or PO Box:
City: Pullman	State: WA Zip: 99164
Phone: 509-335-6327 Fax: 509-335-8328	E-mail: mah@vetmed.wsu.edu

Owner: Last Name first: same as above	Guardian Name: (if owner is under 18)
Farm Name:	First Time Submitter? ☐ Yes ☐ No
Street address:	Mailing Address or PO Box:
City:	State: Zip:
Phone: Fax:	E-mail:

Billing: ☐ Owner ☑ Clinic ☐ 3rd Party (preapproval required) Please note: WADDL policy is to bill the clinic if provided, unless prepaid.

Reporting Preference: ☐ Mail ☐ Fax ☑ Web access - register on web site at http://waddl.vetmed.wsu.edu

Please fill out completely as possible:

Specimen(s) Submitted: nasal swabs
(Please use WADDL Animal ID Sheet for multiple animals.)

Date Collected: July 2016
Date Shipped: n/a

Tests Requested:
☐ Necropsy ☐ Virology ☐ Bacteriology ☐ IHC
☐ Histopathology ☐ Serology ☐ Mycoplasma culture ☑ PCR
☐ Toxicology ☐ Fungal Culture ☐ Parasitology ☐ Other: _____

Note: WADDL reserves the right to modify the tests requested for more efficient case work-up and / or to send specimens to outside laboratories to perform testing not done at WADDL.

Animal ID (name/tag#)	Species	Breed	Age	Sex	Animal Weight
see multiple animal form	domestic goats	multiple	multiple		

Location of Lesion	No. in group	No. Dead	No. Sick	No. on Premises	Duration of Problem
N/A		N/A	N/A		N/A

* Was animal euthanized? If so, what method? N/A

Additional History: *Vaccinations, signs, stress factors, treatments, post mortem findings, pertinent feed or feed additives, clinical lab results, previous WADDL Case Numbers. (Attach additional sheets as necessary.)*

M. ovipneumoniae qPCR on each sample
Please save remaining DNA isolations and call Maggie for pick up or may request further testing (sequencing) be performed by WADDL, depending on the results of qPCR analysis.

Please bill to ADRU-ARS-USDA account #RSA 2540-1080

WADDL is an official brucellosis testing laboratory. All serology for brucellosis, including abortion screens, requires identification of animals, date of sample collection, and signature of an accredited veterinarian attesting to the following statement:
"I certify that the specimens submitted with this form were collected by me from the animal(s) described on the date indicated."

Veterinarian's, Clinician's or Owner's Signature: Maggie Highland	*Condition(s) Suspected:* N/A screening study

Form WADDL 001.1 Version 09-15

2016 – 10050
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routing: md

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

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College of Veterinary Medicine, Washington State University

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Phone: (509) 335-9696	FAX: (509) 335-7424

E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

08/04/16

Owner: Highland, Maggie

Veterinarian: Highland, Maggie

TEST(S) REQUESTED: Movi qPCR

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name
1	_8_A	26	_5_O	51	_4_B	76	_1_E
2	_8_B	27	_5_P	52	_4_C	77	_1_F
3	_4_A	28	_2_A	53	_4_D	78	_1_G
4	_4_B	29	_2_B	54	_1_A	79	_1_A
5	_4_C	30	_2_C	55	_1_B	80	_1_B
6	_4_D	31	_2_D	56	_1_A	81	_1_C
7	_4_E	32	_6_A	57	_1_B	82	_1_D
8	_4_F	33	_1_A	58	_1_C	83	_1_E
9	_4_G	34	_2_B	59	_1_D	84	_1_F
10	_1_A	35	_2_C	60	_6_A	85	_1_G
11	_1_B	36	_2_A	61	_6_B	86	_5_A
12	_5_A	37	_2_B	62	_6_C	87	_5_B
13	_5_B	38	_2_C	63	_2_A	88	_5_C
14	_5_C	39	_2_D	64	_2_B	89	_5_D
15	_5_D	40	_25_A	65	_2_C	90	_5_E
16	_5_E	41	_25_B	66	_2_D	91	_5_F
17	_5_F	42	_25_C	67	_2_E	92	_5_G
18	_5_G	43	_25_D	68	_2_F	93	_5_H
19	_5_H	44	_25_E	69	_2_G	94	_5_I
20	_5_I	45	_1_A	70	_2_H	95	_5_J
21	_5_J	46	_1_B	71	_2_I	96	_5_K
22	_5_K	47	_1_C	72	_1_A	97	_5_L
23	_5_L	48	_1_D	73	_1_B	98	_5_M
24	_5_M	49	_1_E	74	_1_C	99	_5_N
25	_5_N	50	_4_A	75	_1_D	100 *	_5_O

* For over 100 samples, please copy this form and continue numbering.

2016 – 10050
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routing: md

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

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College of Veterinary Medicine, Washington State University

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Phone: (509) 335-9696	FAX: (509) 335-7424

E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

08/04/16

Owner: Highland, Maggie

Veterinarian: Highland, Maggie

TEST(S) REQUESTED: Movi qPCR

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name
101	5_P	126	1_E	51		76	
102	5_Q	127	7_A	52		77	
103	5_R	128	7_B	53		78	
104	5_S	129	7_C	54		79	
105	5_T	130	7_D	55		80	
106	5_U	131	2_A	56		81	
107	5_V	132	2_B	57		82	
108	5_W	133	2_C	58		83	
109	5_X	34		59		84	
110	5_Y	35		60		85	
111	3_A	36		61		86	
112	3_B	37		62		87	
113	1_A	38		63		88	
114	1_B	39		64		89	
115	1_C	40		65		90	
116	1_D	41		66		91	
117	1_E	42		67		92	
118	1_F	43		68		93	
119	1_G	44		69		94	
120	5_A	45		70		95	
121	5_B	46		71		96	
122	1_A	47		72		97	
123	1_B	48		73		98	
124	1_C	49		74		99	
125	1_D	50		75		100 *	

* For over 100 samples, please copy this form and continue numbering.

Washington Animal Disease Diagnostic Lab

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Telephone : (509) 335-9696
Fax : (509) 335-7424

Dr. Margaret Highland
USDA-ARS-ADRU
WSU - 3003 ADBF

Pullman, WA 99164-6630

Case#: 2016-10050
Report Date: 08/19/16

Submittal Date: 08/04/16 | Species: Domestic Goat | Age:
Owner: USDA-ARS-ADRU | Sex:

Final Report:

Molecular Diagnostics- Reported on 08/19/16 Authorized by Daniel Bradway, Lab Manager

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.07.18

Animal	Specimen	Result
[redacted]8_A	Nasal swab	Not detected
[redacted]_8_B	Nasal swab	Not detected
[redacted]_4_A	Nasal swab	Indeterminate
[redacted]_4_B	Nasal swab	Not detected
[redacted]_4_C	Nasal swab	Indeterminate
[redacted]_4_D	Nasal swab	Indeterminate
[redacted]_4_E	Nasal swab	Not detected
[redacted]_4_F	Nasal swab	Indeterminate
[redacted]_4_G	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_5_A	Nasal swab	Not detected
[redacted]_5_B	Nasal swab	Not detected
[redacted]_5_C	Nasal swab	Not detected
[redacted]_5_D	Nasal swab	Not detected
[redacted]_5_E	Nasal swab	Not detected
[redacted]_5_F	Nasal swab	Not detected
[redacted]_5_G	Nasal swab	Not detected
[redacted]_5_H	Nasal swab	Not detected
[redacted]_5_I	Nasal swab	Indeterminate
[redacted]_5_J	Nasal swab	Not detected
[redacted]_5_K	Nasal swab	Not detected
[redacted]_5_L	Nasal swab	Not detected
[redacted]_5_M	Nasal swab	Not detected
[redacted]_5_N	Nasal swab	Indeterminate
[redacted]_5_O	Nasal swab	Not detected
[redacted]_5_P	Nasal swab	Not detected
[redacted]_2_A	Nasal swab	Not detected

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PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.07.18

Animal	Specimen	Result
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_D	Nasal swab	Not detected
[redacted]_6_A	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_D	Nasal swab	Not detected
[redacted]25_A	Nasal swab	Not detected
[redacted]25_B	Nasal swab	Not detected
[redacted]25_C	Nasal swab	Not detected
[redacted]25_D	Nasal swab	Not detected
[redacted]25_E	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_1_C	Nasal swab	Not detected
[redacted]_1_D	Nasal swab	Not detected
[redacted]_1_E	Nasal swab	Not detected
[redacted]_4_A	Nasal swab	Not detected
[redacted]_4_B	Nasal swab	Not detected
[redacted]_4_C	Nasal swab	Not detected
[redacted]_4_D	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_1_C	Nasal swab	Not detected
[redacted]_1_D	Nasal swab	Not detected
[redacted]_6_A	Nasal swab	Not detected
[redacted]_6_B	Nasal swab	Not detected
[redacted]_6_C	Nasal swab	Not detected
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_D	Nasal swab	Not detected
[redacted]_2_E	Nasal swab	Not detected
[redacted]_2_F	Nasal swab	Not detected
[redacted]_2_G	Nasal swab	Not detected
[redacted]_2_H	Nasal swab	Indeterminate
[redacted]_2_I	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected
[redacted]_1_C	Nasal swab	Not detected
[redacted]_1_D	Nasal swab	Not detected
[redacted]_1_E	Nasal swab	Not detected
[redacted]_1_F	Nasal swab	Not detected
[redacted]_1_G	Nasal swab	Not detected
[redacted]_1_A	Nasal swab	Not detected
[redacted]_1_B	Nasal swab	Not detected

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PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.07.18

Animal	Specimen	Result
[redacted]1_C	Nasal swab	Not detected
[redacted]1_D	Nasal swab	Not detected
[redacted]1_E	Nasal swab	Not detected
[redacted]1_F	Nasal swab	Not detected
[redacted]1_G	Nasal swab	Not detected
[redacted]5_A	Nasal swab	Not detected
[redacted]5_B	Nasal swab	Not detected
[redacted]5_C	Nasal swab	Not detected
[redacted]5_D	Nasal swab	Not detected
[redacted]5_E	Nasal swab	Not detected
[redacted]5_F	Nasal swab	Not detected
[redacted]5_G	Nasal swab	Not detected
[redacted]5_H	Nasal swab	Not detected
[redacted]5_I	Nasal swab	Not detected
[redacted]5_J	Nasal swab	Not detected
[redacted]5_K	Nasal swab	Not detected
[redacted]5_L	Nasal swab	Not detected
[redacted]5_M	Nasal swab	Not detected
[redacted]5_N	Nasal swab	Not detected
[redacted]5_O	Nasal swab	Not detected
[redacted]5_P	Nasal swab	Not detected
[redacted]5_Q	Nasal swab	Not detected
[redacted]5_R	Nasal swab	Not detected
[redacted]5_S	Nasal swab	Not detected
[redacted]5_T	Nasal swab	Not detected
[redacted]5_U	Nasal swab	Not detected
[redacted]5_V	Nasal swab	Not detected
[redacted]5_W	Nasal swab	Not detected
[redacted]5_X	Nasal swab	Not detected
[redacted]5_Y	Nasal swab	Not detected
[redacted]3_A	Nasal swab	Not detected
[redacted]3_B	Nasal swab	Not detected
[redacted]1_A	Nasal swab	Not detected
[redacted]1_B	Nasal swab	Not detected
[redacted]1_C	Nasal swab	Not detected
[redacted]1_D	Nasal swab	Not detected
[redacted]1_E	Nasal swab	Not detected
[redacted]1_F	Nasal swab	Not detected
[redacted]1_G	Nasal swab	Not detected
[redacted]5_A	Nasal swab	Not detected
[redacted]5_B	Nasal swab	Not detected
[redacted]1_A	Nasal swab	Not detected
[redacted]1_B	Nasal swab	Not detected
[redacted]1_C	Nasal swab	Not detected
[redacted]1_D	Nasal swab	Not detected
[redacted]1_E	Nasal swab	Not detected
[redacted]7_A	Nasal swab	Not detected
[redacted]7_B	Nasal swab	Not detected
[redacted]7_C	Nasal swab	Not detected
[redacted]7_D	Nasal swab	Not detected
[redacted]2_A	Nasal swab	Not detected
[redacted]2_B	Nasal swab	Not detected

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Washington Animal Disease Diagnostic Lab

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.07.18

Animal	Specimen	Result
[redacted]2_C	Nasal swab	Not detected
[redacted]_1_H	Nasal swab	Not detected

PCR-Mycoplasma ovipneumoniae test comment: This assay detects only Mycoplasma ovipneumoniae. Culture is available at WADDL to detect other species of Mycoplasma if desired. Fees for culture are available on our website. Please contact the lab if Mycoplasma culture or other testing is desired.

This report contains information that is confidential and is intended for the use of the individual or entity named on page 1. If you have received this report in error, please notify WADDL immediately.

Washington Animal Disease Diagnostic Lab — **Case Tracking HALF SHEET**

Quantity/Description/Routing of Samples

133 nasal swabs
– dropped off by
Maggie Highland

Sample Condition:	☐ Room Temp.	☐ On ice	☐ Frozen	☐ Fixed	Contents match forms:	Opened by:
Samples Received Via:	☐ US Mail	☐ FedEx	☑ Drop off		☐ Yes ☐ No	MA
	☐ UPS	☐ FedEx-R	☐ Other:		Explain below:	

Comments for Case Tracking:

2016 – 10050
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: md

08/04/16
notes: 1 page

Sample Label ✓

MA

Form WADDL 070, Version 05-14

ACCESSION FORM FOR GENERAL DIAGNOSTICS

Washington Animal Disease Diagnostic Laboratory

College of Veterinary Medicine, Washington State University
Web Site: http://waddl.vetmed.wsu.edu

US Postal Service mailing address:
PO Box 647034
Pullman, WA. 99164-7034

UPS, FedEx or Courier shipping address:
Bustad Hall, Rm.155-N
Pullman, WA. 99164-7034

Phone: (509) 335-9696
FAX: (509) 335 7424
E-Mail: waddl@vetmed.wsu.edu

2016 – 12311
09/21/16
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: md
form: 2 pages

Please type or use black ink and print clearly.

Veterinarian or Case Coordinator: Last Name:	Highland	First Name:	Maggie		
Clinic:	ADRU-ARS-USDA				
Street address:	ADBF 3033	Mailing Address or PO Box:			
City:	Pullman	State:	WA	Zip:	99164
Phone:	509-335-6327	Fax:	509-335-8328	E-mail:	mah@vetmed.wsu.edu

Owner: Last Name first:	same as above	Guardian Name: (if owner is under 18)	
Farm Name:		First Time Submitter? ☐ Yes ☐ No	
Street address:		Mailing Address or PO Box:	
City:		State:	Zip:
Phone:	Fax:	E-mail:	

Billing: ☐ Owner ☑ Clinic ☐ 3rd Party (preapproval required) Please note: WADDL policy is to bill the clinic if provided, unless prepaid.

Reporting Preference: ☐ Mail ☐ Fax ☑ Web access - register on web site at http://waddl.vetmed.wsu.edu

Please fill out completely as possible:

Specimen(s) Submitted: (Please use WADDL Animal ID Sheet for multiple animals.) nasal swabs-frozen (-20C)

Date Collected: Aug-Sept 2016
Date Shipped: n/a

Tests Requested:
☐ Necropsy ☐ Virology ☐ Bacteriology ☐ IHC
☐ Histopathology ☐ Serology ☐ Mycoplasma culture ☑ PCR
☐ Toxicology ☐ Fungal Culture ☐ Parasitology ☐ Other: _____

Note: WADDL reserves the right to modify the tests requested for more efficient case work-up and / or to send specimens to outside laboratories to perform testing not done at WADDL.

Animal ID (name/tag#)	Species	Breed	Age	Sex	Animal Weight
see multiple animal form	domestic goats	multiple	multiple		

Location of Lesion	No. in group	No. Dead	No. Sick	No. on Premises	Duration of Problem
N/A		N/A	N/A		N/A

* Was animal euthanized? If so, what method? N/A

Additional History: *Vaccinations, signs, stress factors, treatments, post mortem findings, pertinent feed or feed additives, clinical lab results, previous WADDL Case Numbers. (Attach additional sheets as necessary.)*

M. ovipneumoniae qPCR on each sample
Please save remaining DNA isolations and call Maggie for pick up or may request further testing (sequencing) be performed by WADDL, depending on the results of qPCR analysis.

Please bill to ADRU-ARS-USDA account #RSA 2540-1094

WADDL is an official brucellosis testing laboratory. All serology for brucellosis, including abortion screens, requires identification of animals, date of sample collection, and signature of an accredited veterinarian attesting to the following statement:

"I certify that the specimens submitted with this form were collected by me from the animal(s) described on the date indicated."

Veterinarian's, Clinician's or Owner's Signature:	*Condition(s) Suspected:*

IDENTIFICATION SHEET FOR MULTIPLE ANIMALS

(To accompany WADDL Accession form, if needed)

Washington Animal Disease Diagnostic Laboratory
College of Veterinary Medicine, Washington State University
Mailing address: P.O. Box 647034 Pullman, WA. 99164-7034
Phone: (509) 335-9696
Shipping address: Bustad Hall, Rm.155-N Pullman, WA. 99164-7034
FAX: (509) 335-7424
E-Mail: waddl@vetmed.wsu.edu
Web Site: http://waddl.vetmed.wsu.edu

2016 – 12311 **09/21/16**
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routing: md

Owner: Highland, Maggie

Veterinarian: Highland, Maggie

TEST(S) REQUESTED: Movi qPCR

Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name	Tube	Animal # or Name
1	_2_A	26	_2_F	51	_4_B (3)	76	_1_J (2)
2	_2_B	27	_2_G	52	_4_C (3)	77	_1_L (2)
3	_2_C	28	_2_H	53	_4_D (3)	78	_1_N (2)
4	_2_D	29	_2_I	54	_4_E (3)	79	_1_O (2)
5	_9_A	30	_2_J	55	_4_F (3)	80	_1_P (2)
6	_9_B	31	_3_A	56	_4_G (3)	81	_1_Q (2)
7	_9_C	32	_3_B	57	_4_H (3)	82	_1_R (2)
8	_9_D	33	_3_C	58	_4_I (3)	83	_1_S (2)
9	_9_E	34	_4_A	59	_4_J (3)	84	_1_T (2)
10	_5_A	35	_4_B	60	_4_K (3)	85	_1_U (2)
11	_5_B	36	_4_C	61	_4_L (3)	86	_1_V (2)
12	_5_C	37	_4_D	62	_4_M (3)	87	_1_W (2)
13	_5_D	38	_4_E	63	_4_N (3)	88	_1_X (2)
14	_5_E	39	_3_A	64	_4_O (3)	89	_1_Y (2)
15	_5_F	40	_3_B	65	_4_S (3)	90	_1_HH (2)
16	_5_G	41	_3_C	66	_9_F (2)	91	_1_II (2)
17	_5_H	42	_3_D	67	_9_G (2)	92	_1_KK (2)
18	_5_I	43	_3_E	68	_17_J (2)	93	_1_LL (2)
19	_5_J	44	_3_F	69	_17_K (2)	94	_1_MM (2)
20	_5_K	45	_3_G	70	_1_A (2)	95	_1_NN (2)
21	_2_A	46	_3_H	71	_1_B (2)	96	_1_SS (2)
22	_2_B	47	_3_I	72	_1_D (2)	97	_1_ZZ (2)
23	_2_C	48	_26_A	73	_1_E (2)	98	_1_BC (2)
24	_2_D	49	_26_B	74	_1_F (2)	99	_2_H (4)
25	_2_E	50	_4_A (3)	75	_1_G (2)	100 *	

* For over 100 samples, please copy this form and continue numbering.

Washington Animal Disease Diagnostic Lab

P.O. Box 647034
Pullman, WA 99164-7034
Telephone : (509) 335-9696
Fax : (509) 335-7424

Dr. Margaret Highland
USDA-ARS-ADRU
WSU - 3003 ADBF

Pullman, WA 99164-6630

Case#: 2016-12311
Report Date: 10/05/16

Submittal Date: 09/21/16 | Species: Domestic Goat | Age:
Owner: USDA-ARS-ADRU | Sex:

Final Report:

Molecular Diagnostics- Reported on 10/05/16 Authorized by Daniel Bradway, Lab Manager

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.07.18

Animal	Specimen	Result
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_D	Nasal swab	Not detected
[redacted]_9_A	Nasal swab	Not detected
[redacted]_9_B	Nasal swab	Not detected
[redacted]_9_C	Nasal swab	Not detected
[redacted]_9_D	Nasal swab	Not detected
[redacted]_9_E	Nasal swab	Not detected
[redacted]_5_A	Nasal swab	Not detected
[redacted]_5_B	Nasal swab	Not detected
[redacted]_5_C	Nasal swab	Not detected
[redacted]_5_D	Nasal swab	Not detected
[redacted]_5_E	Nasal swab	Not detected
[redacted]_5_F	Nasal swab	Not detected
[redacted]_5_G	Nasal swab	Not detected
[redacted]_5_H	Nasal swab	Not detected
[redacted]_5_I	Nasal swab	Not detected
[redacted]_5_J	Nasal swab	Not detected
[redacted]_5_K	Nasal swab	Not detected
[redacted]_2_A	Nasal swab	Not detected
[redacted]_2_B	Nasal swab	Not detected
[redacted]_2_C	Nasal swab	Not detected
[redacted]_2_D	Nasal swab	Not detected
[redacted]_2_E	Nasal swab	Not detected
[redacted]_2_F	Nasal swab	Not detected
[redacted]_2_G	Nasal swab	Not detected
[redacted]_2_H	Nasal swab	Not detected

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PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.07.18

Animal	Specimen	Result
[redacted]_2_I	Nasal swab	Not detected
[redacted]_2_J	Nasal swab	Not detected
[redacted]_3_A	Nasal swab	Not detected
[redacted]_3_B	Nasal swab	Not detected
[redacted]_3_C	Nasal swab	Not detected
[redacted]_4_A	Nasal swab	Not detected
[redacted]_4_B	Nasal swab	Not detected
[redacted]_4_C	Nasal swab	Not detected
[redacted]_4_D	Nasal swab	Not detected
[redacted]_4_E	Nasal swab	Not detected
[redacted]_3_A	Nasal swab	Not detected
[redacted]_3_B	Nasal swab	Not detected
[redacted]_3_C	Nasal swab	Indeterminate
[redacted]_3_D	Nasal swab	Indeterminate
[redacted]_3_E	Nasal swab	Not detected
[redacted]_3_F	Nasal swab	Indeterminate
[redacted]_3_G	Nasal swab	Not detected
[redacted]_3_H	Nasal swab	Not detected
[redacted]_3_I	Nasal swab	Not detected
[redacted]_26_A	Nasal swab	Not detected
[redacted]_26_B	Nasal swab	Not detected
[redacted]_4_A (3)	Nasal swab	Not detected
[redacted]_4_B (3)	Nasal swab	Not detected
[redacted]_4_C (3)	Nasal swab	Indeterminate
[redacted]_4_D (3)	Nasal swab	Indeterminate
[redacted]_4_E (3)	Nasal swab	Not detected
[redacted]_4_F (3)	Nasal swab	Not detected
[redacted]_4_G (3)	Nasal swab	Not detected
[redacted]_4_H (3)	Nasal swab	Not detected
[redacted]_4_I (3)	Nasal swab	Not detected
[redacted]_4_J (3)	Nasal swab	Indeterminate
[redacted]_4_K (3)	Nasal swab	Not detected
[redacted]_4_L (3)	Nasal swab	Indeterminate
[redacted]_4_M (3)	Nasal swab	Indeterminate
[redacted]_4_N (3)	Nasal swab	Not detected
[redacted]_4_O (3)	Nasal swab	Not detected
[redacted]_4_S (3)	Nasal swab	Indeterminate
[redacted]_9_F (2)	Nasal swab	Not detected
[redacted]_9_G (2)	Nasal swab	Not detected
[redacted]_17_J (2)	Nasal swab	Indeterminate
[redacted]_17_K (2)	Nasal swab	Not detected
[redacted]_1_A (2)	Nasal swab	Not detected
[redacted]_1_B (2)	Nasal swab	Not detected
[redacted]_1_D (2)	Nasal swab	Not detected
[redacted]_1_E (2)	Nasal swab	Not detected
[redacted]_1_F (2)	Nasal swab	Not detected
[redacted]_1_G (2)	Nasal swab	Not detected
[redacted]_1_J (2)	Nasal swab	Not detected
[redacted]_1_L (2)	Nasal swab	Not detected
[redacted]_1_N (2)	Nasal swab	Not detected
[redacted]_1_O (2)	Nasal swab	Not detected
[redacted]_1_P (2)	Nasal swab	Not detected

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PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2016.07.18

Animal	Specimen	Result
[redacted]_1_Q (2)	Nasal swab	Not detected
[redacted]_1_R (2)	Nasal swab	Not detected
[redacted]_1_S (2)	Nasal swab	Not detected
[redacted]_1_T (2)	Nasal swab	Not detected
[redacted]_1_U (2)	Nasal swab	Not detected
[redacted]_1_V (2)	Nasal swab	Indeterminate
[redacted]_1_W (2)	Nasal swab	Not detected
[redacted]_1_X (2)	Nasal swab	Not detected
[redacted]_1_Y (2)	Nasal swab	Not detected
[redacted]_1_HH (2)	Nasal swab	Indeterminate
[redacted]_1_II (2)	Nasal swab	Not detected
[redacted]_1_KK (2)	Nasal swab	Not detected
[redacted]_1_LL (2)	Nasal swab	Not detected
[redacted]_1_MM (2)	Nasal swab	Indeterminate
[redacted]_1_NN (2)	Nasal swab	Not detected
[redacted]_1_SS (2)	Nasal swab	Not detected
[redacted]_1_ZZ (2)	Nasal swab	Not detected
[redacted]_1_BC (2)	Nasal swab	Not detected
[redacted]_2_H (4)	Nasal swab	Not detected

PCR-Mycoplasma ovipneumoniae test comment: This assay detects only Mycoplasma ovipneumoniae. Culture is available at WADDL to detect other species of Mycoplasma if desired. Fees for culture are available on our website. Please contact the lab if Mycoplasma culture or other testing is desired.

This report contains information that is confidential and is intended for the use of the individual or entity named on page 1. If you have received this report in error, please notify WADDL immediately.

Washington Animal Disease Diagnostic Lab — **Case Tracking HALF SHEET**

Quantity/Description/Routing of Samples

99 nasal swabs → MD
per M.H
by M. Highland
→ 250B

Sample Condition:	☐ Room Temp.	☐ On ice	☑ Frozen	☐ Fixed	Contents match forms: ☐ Yes ☐ No	Opened by: MST
Samples Received Via:	☐ US Mail	☐ FedEx	☑ Drop off		Unk	
	☐ UPS	☐ FedEx-R	☐ Other:		Explain below:	

Comments for Case Tracking:

MD to verify

2016 – 12311 09/21/16
Ref Vet: Highland, Margaret
Owner: USDA – ARS – ADRU
Breed: Domestic Goat
Routed: md
notes: 1 page

Sample Label

Form WADDL 070, Version 05-14

WASHINGTON ANIMAL DISEASE DIAGNOSTIC LABORATORY

P.O. Box 647034
Pullman, WA 99164-7034
Phone: (509) 335-9696
Fax: (509) 335-7424

Veterinarian:	Dr. Tom Besser	Owner:	Besser Research
Clinic:	Vet Micro Path	Animal:	
Address:	Bustad Hall Pullman, WA 99165	Species:	Bighorn Sheep
		Breed:	
		Age:	Adult
Phone:	(509) 335-8680	Sex:	

HISTOPATHOLOGY REPORT **06/10/15** **WADDL #2015-7604**
Report authorized by: Kathleen Potter, Senior Pathologist **Received: 06/04/15**

Selective tissues from 3 bighorn sheep are examined.

#28 Lamb: In sections from primarily right cranial lung lobe there are scattered bronchioles lined by mildly hyperplastic bronchiolar epithelium and cuffed by well-organized lymphoid follicles. In a few foci surrounding alveoli are collapsed (atelectic). No inflammatory exudate is identified within airways. Plant material within bronchi and bronchioles is considered artifactual. In other lung lobes, widely scattered bronchioles are cuffed by small accumulations of lymphocytes.

The trachea has one well-developed lymphoid nodule in the submucosa. Sections of liver, spleen, thymus, kidney and intestines are all normal.

#28: In sections of ventral lung lobes bronchi and bronchioles are cuffed by large, well-developed lymphoid follicles. No intra-alveolar exudate is identified. Atelectasis is minimal. Other lung lobes have widely scattered peribronchiolar lymphoid cuffs.

A section of trachea has diffuse mild infiltrates of lymphocytes and plasma cells within the submucosa. Sections of liver, spleen, lymph node and intestines are within normal limits.

#31: Of six sections examined, 1 section (likely cranial ventral lung lobe) has a single, well-developed peribronchiolar lymphoid cuff. Other sections have rare, small peribronchiolar lymphoid infiltrates.

The trachea has mild diffuse lymphoid infiltrates in the submucosa. Sections of liver, heart and intestines are histologically normal.

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HISTOPATHOLOGY REPORT **06/10/15** **WADDL #2015-7604**

HISTOLOGIC DIAGNOSES:

1. Mild (#31) to moderate (#28 and 28L) lymphoid peribronciolitis with mild bronchiolar epithelial hyperplasia
2. Mild lymphoplasmacytic tracheitis (all sheep)

COMMENTS: Lesions in lungs and tracheas are compatible with experimental infections with *Mycoplasma ovipneumoniae*. M. ovi has been demonstrated in all animals by PCR

WORK PENDING: None

Dr. Kathleen Potter/KAP/kap/jdb
3360

Phone contact: Reviewed slides with Dr. Besser on 6/10/15.

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Yager, Patricia

To: Besser, Tom; WADDL Sample Receiving
Cc: Potter, Kathleen (kpotter@vetmed.wsu.edu); Nelson, Danielle
Subject: RE: WADDL case requested

Thanks Dr. Besser,

Logged this as case number 2015-7604. Will bring paperwork and stickers down to Kip's desk next time I head downstairs.

As specimen, I only entered one fixed sample routed to necropsy. We will need a half sheet with a list of samples taken from field necropsy and the tests requested/labs you would like samples to go to, so we can update vadds.

Thank you!

Trish Yager
Sample Receiving
Washington Animal Disease Diagnostic Lab, WSU
509 335-6954

From: Besser, Tom
Sent: Thursday, June 04, 2015 8:39 AM
To: WADDL Sample Receiving
Subject: WADDL case requested

Good morning folks,

We'll be performing 'field necropsies' on three bighorn sheep this morning. Would it be possible to make a WADDL case and print out extra (~3x normal number) of stickers for this case, so I can use them to label the samples?

Please assign histopathology to Kathy Potter.

Call me if you have any questions – [redacted] cell, 5-6075 office.

Thanks!

Tom Besser

2015 – 7604
Ref Vet: Besser, Tom
Owner: Besser Research
Breed: Bighorn Sheep
Routing: kap,n
06/04/15

Washington Animal Disease Diagnostic Lab

P.O. Box 647034
Pullman, WA 99164-7034
Telephone : (509) 335-9696
Fax : (509) 335-7424

Dr. Tom Besser
Vet Micro Path
Bustad Hall

Pullman, WA 99165

Case#: 2014-5187
Report Date: 05/12/14

Submittal Date: 05/01/14 | Species: Bighorn Sheep | Age:
Owner: Besser Research | Sex:

Final Report:

Serology- Reported on 05/12/14 Authorized by James Evermann, Section Head

Please see Serology test interpretation comments at end of report

Sample	Animal	BRSV	BVD	IBR	SRLV	PI-3
21 A Serum	31L2	POS @1:4	Neg	Neg	Neg	POS @1:256
22 A Serum	33L	POS @1:4	Neg	Neg	Neg	POS @1:128 †

† **NOTE: Serum titers to RSV and PI-3 viruses most likely due to maternal antibody. LT for JFE 5/12/14.**

M. ovipneumoniae by ELISA

Specimen	Animal	% I	Result
21 A Blood Serum	31L2	-9.0652	Not detected
22 A Blood Serum	33L	48.938	Indeterminant

Previously reported results:

Bacteriology- Last reported on 05/07/14 Authorized by Dubraska Diaz, Section Head

Aerobic Culture SOP: 303.1.2014.01.09

Animal	Specimen	Result	Isolate
31L2	Spleen	Moderate	Mixed bacterial growth
31L2	Spleen	No Pasteurella isolated.	
31L2 Left	Lung	See comment.	Mannheimia haemolytica

Result Comment:
One colony cultured.

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Aerobic Culture SOP: 303.1.2014.01.09

Animal	Specimen	Result	Isolate
31L2 Right	Lung	Few	Mixed bacterial growth
31L2 Right	Lung	No Pasteurella isolated.	
31L2 eye	Swab	Very Many	Mannheimia haemolytica
31L2 pharyngeal	Swab	Very Many	Mixed bacterial growth
Result Comment:			
Mixed bacteria includes Mannheimia haemolytica and Bibersteinia trehalosi.			
33L	Spleen	Mixed bacterial growth.	
33L	Spleen	No Pasteurella isolated.	
33L Left	Lung	No growth.	
33L Right	Lung	No growth.	
33L eye	Swab	Moderate	Mixed bacterial growth
33L eye	Swab	Very Many	Mannheimia haemolytica
33L pharyngeal	Swab	Very Many	Mixed bacterial growth
Result Comment:			
Mixed bacteria includes Past. sp., Mannheimia sp., and Pasteurella multocida.			

Aerobic Culture test comment:
Mixed bacterial growth is suggestive of post-mortem bacterial overgrowth, contamination, and or incubation of sample resulting in bacterial proliferation.

Histopathology- Last reported on 05/07/14

Histo-field necropsy (Other) SOP: 0601.3.2003.09.18

Animal	Specimen	Result
	Container of Tissue(s)	Reported separately

Molecular Diagnostics- Last reported on 05/09/14 Authorized by Daniel Bradway, Lab Manager

PCR-Mycoplasma ovipneumoniae SOP: 501.40RT.2013.05.31

Animal	Specimen	Result
31L2	Culture Medium-Nose	Not detected
31L2	Culture Medium-Bronchus	Detected
31L2	Culture Medium-Eye	Not detected
33L	Culture Medium-Nose	Detected
33L	Culture Medium-Bronchus	Detected
33L	Culture Medium-Eye	Not detected
Block #1 31L2	Tissue Block Embedded	Not detected
Block #8 33L	Tissue Block Embedded	Not detected

PCR-Mycoplasma ovipneumoniae test comment: This assay detects only Mycoplasma ovipneumoniae. Culture is available at WADDL to detect other species of Mycoplasma if desired. Fees for culture are available on our website. Please contact the lab if Mycoplasma culture or other testing is desired.

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Serology Test interpretation comments:

BRSV (Virus Neutralization) SOP: 204.3.2013.02.04

Negative (Neg): No antibody detected @ 1:4. Submit convalescent serum (10-21d) to detect antibody due to acute infection.

POSITIVE (POS): Antibody present due to exposure, vaccination, or passive transfer. Submit convalescent serum (10-21d) to detect changes in antibody consistent with recent exposure. Endpoint titers available upon request for results reported as >512 and will be set up on the next scheduled testing day.

BVD (Virus Neutralization) SOP: 204.3.2013.02.04

Negative (Neg): No antibody detected @ 1:4. Submit convalescent serum (10-21d) to detect antibody responses to acute infection. Animals immunotolerant to BVD are typically negative for convalescent serum antibody. Virus isolation from chilled whole (EDTA) blood or chilled serum is recommended.

Positive (POS): Antibody present due to exposure, vaccination, or passive transfer. Submit convalescent serum (10-21d) to detect changes in antibody consistent with recent exposure.

IBR (BHV-1) (Virus Neutralization) SOP: 204.3.2013.02.04

Negative (Neg): No antibody detected @ 1:4. Submit convalescent serum (10-21d) to detect antibody due to acute infection. Negative antibody does not exclude latent infection.

Positive (POS): Antibody present due to infection, vaccination, or passive transfer. Serum antibody titers to IBR (BHV-1) usually range from 1:4 to 1:64. Submit convalescent serum (10-21d) to detect changes in antibody consistent with recent infection.

Elevated (ELEV): Positive antibody titers equal to or greater than 1:128 may be indicative of field infection. Contact the laboratory if any questions/comments arise.

SRLV - Small Ruminant Lentivirus (CAE/OPP) (cELISA) SOP: 203.16.1.2012.12.11

Negative (Neg): No antibody to small ruminant lentivirus (SRLV) detected. Submit an additional serum sample drawn in 60 - 90 days in order to detect recent infection.

POSITIVE (POS): Antibody to small ruminant lentivirus (SRLV) detected. A positive result indicates infection or passively acquired antibody via colostrum or serum therapy.

NOTE: SRLV includes caprine arthritis-encephalitis virus (CAEV) and ovine progressive pneumonia virus (OPPV)/ Maedi-Visna. Recent molecular epidemiology has shown both viruses are variants within a group best characterized as small ruminant lentiviruses. The c-ELISA detects both variants. For more information on CAE, please reference: **http://www.vetmed.wsu.edu/depts_waddl/caefaq.aspx**

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Mycoplasma ovipneumoniae ELISA SOP: 203.20.2.2013.01.16

% I $<$40%: Antibody not detected.

% I$>$= 50%: Antibody detected at levels consistent with previous exposure or current infection with Mycoplasma ovipneumoniae.

% I 40% to 50%: Antibody detection indeterminate to establishment of correlation with Mycoplasma ovipneumoniae infection.

The 50% cutoff represents 3 standard deviations from the mean of bighorn sheep from defined negative populations (99% confidence interval). Using the 50% cutoff the performance of the cELISA with reference standards is as follows: Agreement = 95.4%, Diagnostic specificity = 99.3%, and Diagnostic sensitivity = 88%. The 40% cutoff represents 2 standard deviations from the mean of defined negative sheep (95% confidence interval). Using the 40% cutoff the performance of the cELISA for individual animals with reference standards is as follows: Agreement = 95.8%, Diagnostic specificity = 98.6%, and Diagnostic sensitivity = 90.7%. However, the test is designed for classifying populations, not individuals. Populations not exposed to $M.\ ovipneumoniae$ will have 0-10% of animals with 'detected' antibody, whereas exposed populations will have 30-100% of animals with 'detected' antibody.

PI3 (Virus Neutralization) SOP: 204.3.2013.02.04

Negative (Neg): No antibody detected @ 1:4. Submit convalescent serum (10-21d) to detect antibody due to acute infection.

POSITIVE (POS): Antibody present due to exposure, vaccination, or passive transfer. Submit convalescent serum (10-21d) to detect changes in antibody consistent with recent exposure. Endpoint titers available upon request for results reported as $>$512 and will be set up on the next scheduled testing day.

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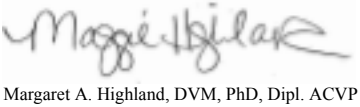
A single publication is often referenced as "evidence" for domestic goats being a threat to bighorn sheep; that publication was published in 2003 in the Journal of Wildlife Diseases, was authored by Karen M. Rudolph, *et al.*, and is entitled "Sharing of *Pasteurella* spp. between free-ranging bighorn sheep and feral goats". The use of this publication as evidence that domestic goats, "feral" or not, have ever caused or may be able to cause epidemic pneumonia in bighorn sheep is a gross misinterpretation of the results outlined in this publication. The one and only scientific-based conclusion that can be taken from this manuscript is that bighorn sheep and domestic goats that come into close contacts with one another may share the same pathogenic bacteria. Nothing more. The authors even admit that there is no way of determining which way the same strains of Pasteurellaceae were transmitted, from bighorn to domestic or vice versa. Even after stating this unknown, the authors go on to state that the "evidence suggests transmission of strains from goats to bighorn sheep" and that "in this report we present evidence which suggests transmission of unique *Pasteurellaceae* stains from feral goats to free-ranging bighorn sheep". What evidence? Personal belief is not scientific based fact.
Let's take a close look at the findings described in this publication:
1 feral goat, 1 bighorn ram, and 1 bighorn ewe were found in close association to one another, separated from a nearby bighorn herd. None of the animals were sampled to determine what bacteria each carried prior to being in contact with one another (as obviously this wasn't possible in this natural setting). The bighorn ewe was showing evidence of respiratory disease, the bighorn ram and feral goat were not. All 3 were shot and samples collected to investigate what respiratory tract bacteria were present in each animal. The bighorn ewe and domestic goat shared several bacteria that the authors identified as being the same strains of Pasteurellaceae bacteria. However, the bighorn ram and bighorn ewe both had what the authors would classify (but don't outright discuss) as the same identical isolate of a pathogenic Pasteurellaceae that the feral goat did not have (see Table 1 in the publication). If bighorn sheep don't carry pathogenic Pasteurellaceae naturally, from where did this bacteria, not identified in the feral goat, originate?

In short, there is absolutely nothing in this publication that provides even a shred of evidence that domestic goats were the source of bacteria that caused the 1995-1996 epizootic outbreak of pneumonia in bighorn sheep described in this publication. A number of comments by the authors honestly reveal the reservations that they themselves had in their attempts to implicate the goats in this area as the source/cause of the 1995-1996 outbreak of bighorn sheep pneumonia in Hells Canyon. If anything, this publication provided evidence AGAINST the 3 feral goats being the source of bacteria associated with (or that caused) the epizootic bighorn sheep pneumonia outbreak that occurred in Hells Canyon during the winter of 1995-1996, as bacteria identified in the 1st feral goat (the one found with the 1 bighorn ram and 1 bighorn ewe) were not found in any of the other bighorn sheep tested during the outbreak. The authors even state "there is no evidence that those organisms were associated with subsequent disease or death", with "those organisms" referring to the pathogenic bacteria found in the bighorn ewe and the 1st feral goat. And again, we have no way of knowing whether the bighorn ewe carried the pathogenic Pasteurella bacteria and transmitted it to the feral goat, or vice versa. Additionally the 2nd and 3rd feral goat found in Hells Canyon around the same time, but "not known to have been closely associated with bighorn sheep" were tested and found to carry non-pathogenic (LktA negative) Pasteurellaceae bacteria. Testing of these non-pathogenic bacteria indicated that these bacteria were similar (or the same bacteria strains based on the authors' conclusions) to that identified in bighorn sheep that died during the outbreak. These bighorn sheep had no known contact with

the feral goats and the bighorn sheep were certainly not dying from pneumonia caused by the non-pathogenic bacteria found in the 2 feral goats (LktA has been shown to be the necessary virulence factor needed to cause lethal disease, therefore without LktA *Mannheimia (Pasteurella) haemolytica* and *Bibersteinia trehalosi* would not be the cause of pneumonia). So what does this mean? It means that no bacteria identified in the 2 feral goats would have caused the bighorn sheep pneumonia outbreak. The authors even mention that the outbreak the 1995-1996 outbreak describe in the publication was "incidental" to sampling of the feral goats and the 2 bighorn sheep that were in close proximity to one of the goats.

If tissues/samples from the 3 feral goats and all or any of the bighorn sheep described in the manuscript are still available, it would be of utmost importance to perform further analyses to determine whether the now recognized primary agent of bighorn sheep pneumonia, *Mycoplasma ovipneumoniae*, was present in the feral goats and whether the same strain of *Mycoplasma ovipneumoniae* was identified in the bighorn sheep that died during the epizootic pneumonia outbreak of 1995-1996. Additionally, genetic screening of the Pasteurellaceae bacteria identified in the Rudolph, *et al.* publication should be performed, as the limitations and inaccuracy of the methods used to identify the Pasteurellaceae bacteria (particularly *Mannheimia haemolytica*) in the Rudolph, *et al.* publication have been personally observed (M. A. Highland) and also described in a publication by Miller, *et al.* ("Phylogentic and epidemiologic relationships among *Pasteurellaceae* from Colorado bighorn sheep herds", Journal of Wildlife Diseases, 2013. 49(3), pp. 653-660.). If these samples are no longer available for additional analysis, then the use of this publication as evidence that goats are a source or cause of bighorn sheep pneumonia should be dismissed all together, as this publication clearly does not support contact with goats as the cause bighorn sheep pneumonia. In addition, and further providing little support for goats being a threat to bighorn sheep, is the fact that there have now been 4 captive research studies performed in which domestic goats have been penned together with bighorn sheep. Of these studies, just 2 of 7 bighorn sheep died in 1 of the studies; death in both of the bighorn sheep was contributed to *Mannheimia haemolytica*. Overall 2 of 16, or 12.5% of the bighorn sheep placed in forced captive settings with domestic goats died. In 2 of the studies, a goat strain of *Mycoplasma ovipneumoniae* was either known to be present or purposefully introduced, and while all of the animals (both domestic goats and bighorn sheep) developed signs of respiratory disease, they started to recover and none of them died from pneumonia.



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